BULLETIN

OF THE

AMERICAN GEOGRAPHICAL SOCIETY

VOL. XLVI 1914 No. 11

THE TREND OF MODERN GEOGRAPHY

A SYMPOSIUM

Conducted by G. B. ROORBACH
University of Pennsylvania

There prevails a general impression, even among geographers themselves, that there is little or no agreement as to what geography is or what its purposes and problems are. It has been commonly said that there are as many definitions of geography as there are geographers; that the subject is not a distinct and separate science with a single aim and purpose. In an attempt to determine whether or not the diversity of opinion is as great as is commonly supposed and to gain an idea as to just what present-day geographers regard as the real purpose of their subject, the following question was sent to a number of representative geographers both in the United States and Europe:

What, in your opinion, are the three most important problems that need solution, or the three most important lines of investigation that need to be followed, in the subject of geography?

In all, 39 replies were received to the letter. In the analysis which follows, however, only 29 answers are considered, representing the English-speaking countries. Of these replies 25 are American and 4 British.[1]

[1] Since, at the time of writing, only three replies had been received from continental Europe, it seemed best to restrict the analysis to the replies from Great Britain and the United States, representing the English-speaking countries. Seven American geographers acknowledged the letter, but did not answer the question; three giving as their reason inability to answer it; three could not give sufficient time for adequate answer; and one refused to answer because he regarded the investigation of little value. Of the 29 geographers repre-

XUM

That among these geographers, at least, there is nearly unanimous agreement as to what geography is, the replies clearly show. With but two or three exceptions, the letters substantially state, or imply by the line of investigations suggested, that geography concerns itself with the study of the relationship between earth and life, particularly human life. There is considerable difference of opinion as to just what lines of investigation should be followed, but almost general agreement that the aim of geographic work of whatever kind is to establish the facts of, and deduce the principles underlying, this relationship between the physical earth and its inhabiting organisms. The spirit of most of the letters is, perhaps, summed up in the statement by A. P. Brigham "that the real goal and heart of our science is in the field of human geography. Physical geography is a large, but not the largest, part of the subject. It only contributes to the deeper and wider aims that most justify geography in claiming the place of a science among sister bodies of truth." It is significant that only two of those replying gave a problem in pure physical geography as most important, and one of these two problems is suggested avowedly as an aid to the geographer in his work of interpreting life responses to physical features.

Some difficulty has been experienced in analyzing the answers for the reason that several replies have given large, general problems while others have given a specific, definite thing to be done. Some have merely stated the problems they regard as most fundamental; others have given reasons for the opinions expressed. In the analysis, the attempt has been made to group the replies under general headings, putting together, so far as possible, those suggestions that have a similarity of purpose, that look toward the solution of the same general problem, even though the specific problems suggested may be quite diverse. Of the problems sug-

---

sented in the analysis, 17 are university or college professors of geography, 3 normal school professors, 5 editors of geographical publications, 2 explorers, 2 government scientists.

Those who answered the question were: Chas. C. Adams, University of Illinois; Cyrus C. Adams, Editor, *Bull. Amer. Geogr. Society;* W. W. Atwood, Harvard University; H. H. Barrows, University of Chicago; Isaiah Bowman, Yale University; A. P. Brigham, Colgate University; R. M. Brown, Rhode Island Normal School; H. G. Bryant, Geographical Society of Philadelphia; Col. C. F. Close, Director-General, Ordnance Survey of Great Britain; R. E. Dodge, Columbia University; Chas. R. Dryer; F. V. Emerson, Louisiana State University; N. M. Fenneman, University of Cincinnati; Henry Gannett, Geographer, U. S. Geological Survey; G. H. Grosvenor, Director, National Geographic Society; H. E. Gregory, Yale University; Geo. D. Hubbard, Oberlin College; Ellsworth Huntington, Yale University; Mark Jefferson, Ypsilanti (Mich.) State Normal School; W. L. G. Joerg, Assistant Editor, *Bull. Amer. Geogr. Soc.;* J. Scott Keltie, Royal Geographical Society; L. W. Lyde, University College, London; A. G. Ogilvie, Oxford University; R. E. Peary; R. D. Salisbury, University of Chicago; J. R. Smith, University of Pennsylvania; W. S. Tower, University of Chicago; F. R. Waldo, Geographical Society of Philadelphia; R. H. Whitbeck, University of Wisconsin.

gested in the replies, the greatest number regarded as most important:

The Exact Determination of the Influence of Geographic Environment. Of the 29 replies, 22 stated this to be one of the chief problems facing the modern geographer or implied by their answers that this was the chief problem to the solution of which specific investigations should lead. "This is, and will long be, the crux of the geographer's problem," says A. P. Brigham. "We must not merely understand the more apparent responses that man makes and has made to natural conditions, to heat and cold, aridity and moisture, to land form, to the sea, to environing organisms—we must also seek ultimate influences, deep, remote, ancient, tangled as they may be, whatever apparent hopelessness the maze of obscure conditions and unsolved enigmas may oppose to our attempt." Here comes the need of special geographic training, for, continues Professor Brigham, "There is much loose writing on the influence of environment. Results are assigned to one cause where there are several or many possible causes. Factors lie buried under our ignorance at every turn. To know the origins and development of human culture, to grasp the various sciences of man as interpreted by the principles of modern biology, will lay some of the stepping-stones by which the geographer must toil up to surer standing-ground and to a more rational definition of the science than we yet have."

"It devolves upon the geographers," says Charles R. Dryer, "to show how the inorganic world and the organisms that live in it influence and react upon one another" and the investigations of the geographer should lead to this end. "The working out of life relations to earth factors," F. V. Emerson thinks is the most important problem, although "in America this seems rather overshadowed by technical work in physiography, due, doubtless, to the fact that most of the departments of geography have originated in, and are closely associated with, the departments of geology." R. H. Whitbeck says that the question of chief interest to himself is "to what degree physical environment has been a determining factor in organic evolution." As a more definite problem leading to the solution of this, he would have answered, as the second question needing solution: "What evidence is there that the distinguishing characteristics of the races of mankind are due to geographic environment?" L. W. Lyde also gives as a most important problem that of "the historic differentiation of human types." "If we knew the original causes of this differentiation,"

XUM

says Professor Lyde, "we should have the key to climatic naturalization, i. e., we should know how to develop at once the vast unoccupied races of the world in their essentially natural lines." J. R. Smith, while giving as the first great need "the study of the exact influence of environment on man," would also reverse the problem and study "man's influence upon the environment, especially in the form of the study of resource destruction." The investigation of the effects of the destruction of trees and forests in historic times he mentions as particularly needing study.

Other replies state more particularly problems of investigation of the influence of geographic environment that should receive attention. Ellsworth Huntington suggests as a most important investigation the determination of "the exact effect which different types of environment produce upon the human system and hence upon human character and activities." "It includes," he says, "such problems as those raised by Boas in his statement that the head form of immigrants changes when they come to America. It includes the problem of tropical diseases and other conditions of health and activity. It includes also the question of how far the character of such a people as the Germans depends upon their location in Europe and upon their climate, rather than upon some innate racial quality which is psychological rather than biological."

In this connection, emphasizing the need of more exact thinking, Professor Huntington believes that a second important line of investigation should be "the statistical analysis of a vast number of commonly accepted statements." As an example selected from many that might be given, he suggests an accurate analysis of the statement that "Britain owes her position in world affairs to her central location." Such an analysis raises important questions, as appears from a rough examination of the figures; for "so far as distance to America is concerned, Spain, Portugal, France and England are essentially on a par. They have a slight advantage over the Netherlands, Germany and Scandinavia, but manifestly this is of no great importance, for the Netherlands and Germany are vastly ahead of Spain and Portugal in the amount of communication with America." As for distance from other European countries, "England by no means has any great advantage." For example, the sum of the distances from each capital of seven of the leading European nations to the capitals of all the others shows that the combined distances from London to the other capitals are greater than from Vienna, Paris, Berlin and the Netherlands. And "when the distance of England by sea from the other countries of Europe

is considered, we find that England has still less advantage," for an examination of the proximate distances by water from the nearest important port of any one of the countries to the nearest important port in each of the others shows that the distance from France by water to eight other European countries is 2,300 miles; from Spain, 9,000 miles; from Russia, 9,800 miles; from Germany, 10,000 miles; from Austria, 10,700 miles; from the Netherlands, 10,700 miles; from Britain, 11,200 miles; from Scandinavia, 11,700 miles; from Italy, 13,800 miles. "In relation to other continents the same thing is true, for France is nearer than either England, Germany, or the Netherlands to Africa, Asia, and Australia, and is equally near to North and South America. Hence, if mere position were the factor of primary importance, it would seem as if France ought to hold the position which is actually held by Britain."

Wallace W. Atwood suggests an investigation of "how modern industrial development is being influenced by geographic conditions" as being the most promising in the study of geographic influences. This is, he says, "a world-wide problem which brings our attention to the present day, and it seems to me that it is quite appropriate for geographers to be giving more and more attention to the present."

Several replies give climatic investigations as the most important in answering the question of geographic control, but most of those who mention climatic influence mention it as but one means towards the solution of the general problem of physiographic influence. Mark Jefferson thinks "there is most need of investigation of the distribution of man over the earth and the explanation of the facts observed." This leads immediately, he says, "into the investigation of the facts of climate as probably most significant in the control of human occupation of the earth and least understood at present among all large factors." Henry Gannett says that the most important geographic subject is "the climatic changes now going on, or which have been going on in recent times, their effects on man, his migrations and his physical and mental characteristics."

H. E. Gregory is in agreement with Mark Jefferson in giving as the chief problem of geography "the distribution of the present population of the world, in general and in detail, and the causes of that distribution." Professor Gregory gives as a second important problem "the evaluation of the geographic factor in history as supplementary to, and corrective of, written documents." A means by which such a problem may be solved is given by Isaiah

Bowman, in his suggestion as a most important line of research the "study of new frontier societies." He says, "One of the greatest opportunities before us is the study of the twentieth-century colonists. To take but one example,—the colonists of the Argentine-Brazilian frontier. There one finds old-world groups set down in a border region where they are subjected to the influences of a new environment and contact with people of a distinct type, yet enjoying many of the advantages of settled societies. The part they play in the national life, the degree to which they become modified by new influences and how they help modify the original peoples in their adopted country are questions of vital interest in geography. For a long time historical geology made but slight advances because man observed only the results of the past, paying far too little attention to the key offered by present processes. Geographers may contribute in the same way to the next great advance in history by the thorough interpretation of new peoples in a frontier environment."

A large majority of the replies emphasize geographic influence in its human aspects. Three answers, however, point out the need of investigations in animal and plant geography. H. H. Barrows mentions as one of the four most pressing needs investigations particularly in animal geography, "a field in which very little has been done." Charles C. Adams, disavowing in his answer any attempt to state the most important problems, gives as "worthy of immediate investigation, on account of the present exceptional opportunities, the invasion of animals upon new land surfaces and a study of the controls involved in this, as in glacial cirques with the retreat of glaciers; in an invasion upon volcanic débris; with the evaporation of Salton Sea; and following earthquakes and large land slides."

Prof. Lyde emphasizes the need of solving the problems of plant geography as far as concerns "the relative value of the various controls in the production of our great staples, *e. g.* maize." "Much time and trouble and money," he says, "are wasted because we do not know precisely what are the really valuable or vital factors. *E. g.,* exactly how little direct relation is there between actual temperature and yield, and exactly how much between actual rainfall and yield? If we knew we should be able to economize effort and to increase returns to an almost unlimited extent."

Regional Studies. Eleven replies place investigations in regional geography among the most important. "What is most needed," says Isaiah Bowman, "is intensive field work in well-

selected regions. This means repeated return of the investigator to his chosen region until he has gained an intimate knowledge of its people and their environment and is in a position to become ther interpreter to the world." "Intensive studies in regional geography," says W. S. Tower, "represent a fundamental line of endeavor for the future welfare of geography as a whole. That I should place first among all the lines of investigation to be followed. The chief reason for that belief is that, by so doing, there would be made available not only much needed new material, but also at the same time there would be provided the basis for comparative studies of different regions." "Complete geographic interpretations of selected areas," says H. H. Barrows, "based both on field and laboratory work, would serve as type studies and help materially to standardize methods of investigation and of writing."

Regional study involves the division of the world into natural regions, according to several. In the words of Charles R. Dryer, "Environments must be studied scientifically, by the same methods as plant and animal communities are studied. However complex they may be, they must be analyzed and classified according to the totality of their characters. In this sense a natural environment must possess not only substantial uniformity, but also continuity in space. Here the special work of the geographer comes in and consists in the delimitation and mapping of the habitable earth into natural regions. This is necessary as a working scheme, however distant its standardization may be." This having been done, a second great problem for geographic investigation, says Professor Dryer, is to determine "the actual and possible economic functions of every region of the earth."

This same need is voiced by Alan G. Ogilvie, who says, "The main object of geography is the description of the earth. The most satisfactory method of attaining this object is the systematic description of natural regions. . . . This regional description should be causal and explanatory; and the evolutionary idea must be kept clearly in view. The geographical unit is to be regarded as a complex of which the various elements, *e. g.*, landform, vegetation, race, have reached certain points in their evolution." However, continues Mr. Ogilvie, "before a reasoned description of a region can be attempted, the land must be adequately mapped and investigations must be made in various branches of science, *e. g.*, geology, meteorology, botany. At the present time men engaged on those sciences have not been able to spend sufficient time

to satisfy the geographer upon what may be called the borderlands of their sciences. It is therefore advisable for the present that every geographer, in addition to his main descriptive work, should adopt some subject for special work or research, such as surveying and cartography, physiography, climatology, plant ecology, ethnology, or, in the case of geographers studying coastal regions, oceanography. In course of time these subjects ought to occupy a sufficient number of specialists. But even so, there will still be room for the geographer, who will continue to make use of the material provided by the specialists, and so work towards his description of the whole earth. When that is completed the changes brought about by civilization will probably furnish him with quite enough matter for his work."

J. Scott Keltie emphasizes this same need of regional study. The business of the scientific geographer "is to study the great features of the earth's surface in adequate detail and to investigate the influence of these features, including climate and hydrographical conditions, on the distribution of other factors on the earth's surface, and especially of humanity." Little has been done in this field, Dr. Keltie claims, even in those areas which have been adequately mapped and explored. "This," he concludes, "is a department of geographical work which might be carried on indefinitely and which has important practical bearings on the activities of the human race."

Speaking from the standpoint of American geography, four replies give North America or the United States as the region needing study. W. L. G. Joerg says: "In my opinion our greatest need is a systematic geography of the United States or, preferably, of North America, along modern lines, similar in scope to Mackinder's *Britain and the British Seas,* Partsch's *Mitteleuropa* and Vidal de la Blache's *La France: Tableau Géographique.* It should, of course, embrace all phases of the subject, both physical and human, and be sufficiently detailed to bring out all essentials. At present we have no such works in English. Those available are either out of date or ungeographical in point of view, or, where this is not the case, do not present all phases of the subject. For a distinctly geographical treatment of the topic we must turn to foreign sources, such as Ratzel's *Die Vereinigten Staaten von Nord Amerika* or Reclus's *Les États Unis.* However excellent such works may be, they cannot but lack the native investigator's sympathetic intimacy with the subject. The wealth of available material, too—especially in government and other official reports—

is a direct incentive to a synthetic treatment. A corollary desideratum is an atlas representing critically all phases of the geography of the United States or, again preferably, of North America, similar in scope to the official *Atlas of Canada,* Bartholomew's *Survey Atlas of Scotland,* or the Finnish Geographical Society's *Atlas de Finlande.* A need related to the first is a systematic geography of the outlying dependencies of the United States similar in scope to *Das Deutsche Kolonialreich,* edited by Hans Meyer. A. H. Brooks's *Geography and Geology of Alaska* is an admirable beginning."

R. E. Dodge and George D. Hubbard suggest a systematic study of the geography of each of the physical divisions of the United States. This should show, says Professor Dodge, "the relationship of climate, surface, drainage, economics and the present and past social conditions; that is, each unit should be studied as a unit area, regardless of state lines, in such a way that in the course of time we may have a series of monographs descriptive of the several natural regions of our own country, that will be authoritative and scientific." The geographic work for each division, says Dr. Hubbard, should "stand as high in geography as Bailey Willis's *Northern Appalachians* and other papers of that class stand in physiography."

"Not all geographers," says Professor Brigham, "appreciate the universal value of apparently commonplace facts of geography at their own doors. . . . Here the Germans have a large lesson for us, in the innumerable monographs relating to the population, industry, agriculture, commerce, history, evolution of culture and types of culture, in small areas of the Fatherland. This is not said in the spirit of criticism, for Germany is small and the workers are many. America is vast and the workers are few. Such special work in limited areas will afford also a vast body of immediately practical knowledge, and there is no reason why geography should not, like chemistry or physics, try to make itself as useful as possible to the common man and to every man."

Definition and Organization of Geographic Material. This need is placed among the most pressing problems by eight. The first and most important problem in geography, as distinguished from a line of investigation, says Dr. Tower, "is to remove completely the differences of opinion as to where the discussion of a geographic topic should begin and end. I find constantly evidences of nothing definite in the way of limitations on the sort of matter which may be labeled geographic. Until some general agreement is reached in this matter it must remain difficult, if not impossible, to attain anything ap-

XUM

proaching systematic organization of the subject." Secondly, continues Dr. Tower, "the problem of correlation and systematic presentation of the subject matter of geography requires attention. There is a tremendous mass of material already accumulated along different lines of the subject, much of which material is still entirely unorganized. For example, in economic geography, an enormous body of facts is easily available for discussion of one sort or another, but so far there has been no really satisfactory organization of those facts into a logical, scientific presentation of that phase of geography. As a result, we have many facts to talk about, but little in the way of principles which have been deduced from these facts."

Colonel C. F. Close is of essentially the same opinion. He says, "The most important problem is the definition of the subject itself. When we talk about chemistry, geology or astronomy we have a clear idea of the scope of these sciences, but when we talk of geography we find there is no general agreement as to its scope and we cannot even say if it is a science. There is the greatest divergence of opinion as to what geography is. Thus, I believe I am right in saying that Prof. W. M. Davis defines geography as 'modern geology,' Dr. Keltie says that geography is 'the study of the earth as the home of man,' Dr. Mill defines geography as the science which investigates the influence of the irregularities of the surface features on the mobile distribution, and I think I remember having heard Mr. Mackinder remark that 'Geography is not a science but an attitude.' This want of definiteness is a serious drawback and it has, indeed, militated against the acceptance of geography in certain universities as a subject fit to rank as a definite compartment of organized knowledge. It is, I am inclined to think, not yet, as a fact, an organized branch of knowledge. But in saying this I would in no way depreciate the admirable work done by the geographical societies. They have the great merit of covering a very wide field of interest and of introducing the earth-sciences to each other. These earth-sciences are geology, geophysics, geodesy, climatology, and meteorology and oceanography, and to those we must add exploration, surveying and cartography, which are not sciences but auxiliary arts. To the group of earth-sciences we may also add ethnography, sociology and political science as subjects which find a welcome in geographical circles. It is the note of a science that it not only accumulates records of fact but advances the thinking power of humanity by means of generalization. Every true science has its generalizations and its best energies are spent

in pursuit of them. Without them the masses of accumulated facts are unusable. I believe that at present geography has no generalization, it has discovered no general laws or relationship." Having settled what geography is, continues Colonel Close, the second need "is a really scientific aim, keeping in mind the fact that a science worthy of the name must aim at the discovery of general laws."

R. E. Dodge states the problem as "the organization of the principles of human geography in such a way that these principles could be used by geographers, anthropologists and historians, as well as economists and perhaps sociologists in the border lands between geography and these other sciences"; H. H. Barrows as "the collection, organization and interpretation of the widely scattered facts of geography." Mark Jefferson says, "in general the greatest tasks of all are still the ascertainment of all possible facts of geography" and the putting of them "into groups and relationships admitting simple statements qualified by statement of the width of applicability to which they are entitled." N. M. Fenneman gives as one problem "to collect, tabulate and plot the essential facts relating to human life . . . to enable the trained student, at least, to obtain the necessary data of his thinking with less wasteful effort than is now necessary" and, as another, "the study and formulation of those general principles of control (if there be such) which relate the facts of human life to the physical features of the earth." "I have in mind here," he says, "not so much the study of individual states and communities but the philosophic study of principles, which, of course, presupposes the study of individual cases. In other words, I feel that geography, like any other science, must culminate in a philosophical aspect and that without such philosophical side or culmination, the study will continue to be, as was said of it a few years ago, 'dead at the top'."

Improvement of Geographical Education. This is mentioned as a most important problem in geography by eight out of the twenty-nine replies. It includes the establishment of geographical courses in universities, the improvement of text-books and apparatus, the training of teachers, the general spread of geographic knowledge among the people.

Richard E. Dodge states the problem thus: "The better organization and promotion of geography in our colleges, universities and normal schools, not only for the benefit of the students thereof, but for the teachers of geography in secondary and elementary

XUM

schools, in order that geography may be a working field of knowledge appreciated by the on-coming generation and used by them to a fuller extent than it is now."

Professor Brigham states the problem as related to the training of geographers in the universities: "This involves," he says, "the establishment of chairs of geography in greater measure distinct from geology, and should lead to a broader and deeper discipline of special scholarship."

Isaiah Bowman says the great need is in the training of normal school teachers. "Distinct progress has been made in the establishment of geography in the universities. The subject is bound to have wider recognition if its research work is properly advanced. The better text-books of to-day have also greatly elevated elementary instruction. The weakest link in the chain is the normal school. One cannot view, except with the greatest distress, the existing state of affairs. Normal-school teachers of geography should be the product of the universities. It ought to be illegal for a teacher to conduct classes of students through the principles of the subject without having had advanced instruction in university or college courses. Here is a vital 'problem that needs solution.' How can we get the fact established that expert teachers of geography are absolutely necessary in normal and high schools? We are letting the blind lead the blind. Furthermore, a teacher should be inspiring. Recently a normal-school teacher said to me: 'I like to teach drawing, but how I hate geography.' The geography taught in the sixth grade was all that some of her students had had up to the time they entered the normal school. How they too must have hated geography! When one thinks of the possibilities of the subject, its almost universal human appeal when adequately taught, its fundamental relation to history and anthropology, and its disciplinary value, one is appalled to find it presented by wholly untrained teachers, out of sympathy with its spirit and blind to its treasures."

Henry G. Bryant says that geographical instruction in America needs to be improved "that it may eventually receive the same recognition here that it now obtains among the institutions of learning in Europe."

R. M. Brown not only further emphasizes the need of improved teachers and geographic apparatus in high and elementary schools, but says there should be a "distinct effort to bring the gist of geography to the busy man as well as the untutored." This latter need is given first place among geographic problems by Gilbert H.

Grosvenor, who also pleads for better teaching in the schools. George D. Hubbard adds to the need of expanding college geographic teaching that of "the development of distinctly geographic work and issuance of geographic publications by state surveys" and "more thorough recognition of geographic phases of the work of the various government bureaus, such as the Census, Weather Bureau, Department of Agriculture, Consular Service, etc."

"The one great problem," says Cyrus C. Adams, "relates to the co-operation of geographers and geographical societies to raise the standard of geographical education in this country." "There is no reason," continues Mr. Adams, "why we should not work out a revolution in the position of geographical education in this country, such as the United Kingdom has achieved in the past thirty years. . . . The influence of the work we should take in hand will ultimately filter through to the common schools. We shall have a demand for better appliances of all kinds and the improvement will be noteworthy in the newspaper and the encyclopedic treatment of the subject and confer other boons which our country sorely needs. Japan places in the hands of her common people better maps than we produce; we are inferior in such appliances to all the countries of Europe excepting Spain and Portugal, and Scott Keltie in his recent *History of Geography* singled out our country as notable for the inferiority of its non-official map products."

Geographic Factor in History. Six replies regard historical problems among the most important. This problem might well be regarded as a part of the first, namely, the determination of the exact value of geographic influences, but here applied to past events. "What we need," says Ellsworth Huntington, "is not to say that there is a relation, but to take specific areas and carefully work out the exact facts—expressed in numbers, if possible—which illustrate the connection of their history with their geography. For example, take such a state as Kentucky. One of the primary facts in its history seems to be its changing relation to three areas: (1) Virginia and the neighboring states in the early days when the main route to Kentucky was through the Cumberland Pass; (2) its relation to the South in the days when steamboats made the Mississippi a great trade route, and when the profitable raising of cotton created a demand for foodstuffs in the slave-owning states; (3) its relation to the great manufacturing states of the northeast and to the main trunk lines of railway which run north of it and not through it at the present time. If the geographers could take

XUM

problems like this and could work out the detailed statistics for a large number of relationships we should soon find that as a matter of course geography and history were regarded as going together in just the way that chemistry and physics are regarded."

"By the application of geographic methods and principles to history," says C. R. Dryer, "geographers, by extending help to the historians, would pay off a long score of indebtedness, strengthen the credit of their science and form an alliance which would contribute to the mutual advantage of geography and history."

Herbert E. Gregory would have geography solve the problem of "the history of man in regions where there are no written records and therefore where the only method of solution is geography," and Gilbert H. Grosvenor would apply this method of solution in "the study of ancient civilization in America." "This problem," he thinks, "will be solved not by an archeologist but by some able geographer who appreciates the problem from a broad geographic point of view."

Wallace W. Atwood also would have investigated "the influence of geography upon American history," for "studies in this field are enlarging our appreciation of the significance of geography and proving of great significance in the interpretation of history."

W. S. Tower, regarding as one of the chief needs of geographic investigation "the field where history and geography come into contact," thinks that "it is a line of research which is, perhaps, less likely to be developed as much as is desirable" because "in order to prosecute this investigation, the person engaged must be a highly trained man, both in history and geography."

Exploration should still be considered one of the great things requiring the attention of the geographer, six of the replies indicate. J. Scott Keltie places it as the most important. He says: "There still remains a very great amount of pioneer exploring work to be done. In South America there is probably a million square miles practically unexplored and much more that has been explored and mapped in a very imperfect and provisional form. Even in Canada there are still considerable areas that are practically unmapped. Africa may be said to have been explored and mapped provisionally so far as its leading features are concerned, but except in South Africa, in Egypt, in Algeria, to some extent in Tunis, in the Sudan and in portions of the British, German and French possessions in Central Africa, there is still a vast amount to be done before the continent is accurately mapped and its great

features known in adequate detail. In Asia, Arabia to a large extent still awaits the pioneer, and in Central Asia, Tibet and the regions around, there is still ample opportunity for the work of the pioneer, while in China, the Malay Peninsula and even in Persia, what mapping there is is mainly of a provisional character. As for the oceans only a fraction of them may be said to have been adequately investigated."

Alan G. Ogilvie thinks the important thing is re-exploration, rather than initial exploration. He says, "The amount of initial exploration which remains to be done is now small. What I will call re-exploration will become of the first importance and it should be undertaken by geographers with a sound general training and a natural geographical sense. Moreover, they must work hand in hand with the specialists, by assisting them to collaborate, and so supply their materials for the regional description in the most suitable form."

"Research in new lands," as given by George D. Hubbard, is evidently equivalent to Mr. Ogilvie's re-exploration. "The inter-tropical American lands," says Dr. Hubbard, "are probably our best openings aside from our own colonial possessions. They are not much occupied, unclaimed geographically, and but little known as to resources or topography; yet they are of growing importance to us as sources of raw materials, foods and markets." F. V. Emerson also regards exploration of our own continent as very important.

Robert E. Peary regards as the three things most needed: "(1) The geographical survey and scientific study of the entire circumference of the Antarctic Continent. (2) The establishment at the South Pole, and at Cape Columbia, less than 500 miles from the North Pole, of stations for a year of continuous systematic observations simultaneous with those at permanently occupied stations in America, Europe, and Asia. (3) The completion of the exploration of the unknown Arctic region between the Pole and Bering Strait, which MacMillan and Stefansson are at work on from this side, and which the Russians began on the Asiatic side by Captain Vilkitzky's discoveries north of Cape Chelyuskin last year."

Henry G. Bryant gives as two of the three important problems the investigation (1) of the large unknown area in the Arctic Ocean "with a view of determining the extent of the continental shelf, depth of ocean floor, force and direction of drift currents, and the existence or non-existence of land masses in the area re-

XUM

ferred to" and (2) "the continued systematic investigation of the Antarctic Continent."

Physical Geography. Only two replies give distinctly physiographic problems. W. W. Atwood sees a need for investigating "the physiographic history of the western Cordilleran Province of North America, a wonderful geographic province, which has as yet been studied in widely separated localities. The relationship of the various sub-provinces to the history of the province as a whole, opens one of the largest problems in physical geography on this continent, a problem distinct from any of the large problems in physical geography which have thus far been worked out."

N. M. Fenneman gives as a problem in physical geography, "To perfect and put into use as quickly as possible a genetic classification of land forms. This implies that regions already known should be described in those terms for the use of geographers and that other regions not so known should be studied in that light. The object of this would be to give the geographer good mental pictures with one-tenth of the reading now necessary."

Other Problems. Among other problems mentioned are: by H. H. Barrows, "the development of more effective methods of geographic description and interpretation"; by F. V. Emerson, "the development of common terms and concepts, *i. e.*, an increase and clearness of the terms used so that both writing and thinking shall be clearer"; by Mark Jefferson, "adequate expression of what is learned"; by L. W. Lyde, "the problem of correlating climatic phenomena, *e. g.*, the absence of ice in the Weddell Sea or off Spitzbergen to the subsequent failure of the Nile flood or the wet monsoons of India."

MODERN KOREA*

By R. MALCOLM KEIR
Department of Geography and Industry
University of Pennsylvania

Cattle Raising. In strong contrast to Japan no part of Korea is lacking in cattle. In the south and southeast the bullock is necessary to drag the plow through the thick, heavy mud of the rice fields. Every farmer has at least one work animal. So indispensable are the bullocks that at the time of a scourge that killed the beasts of burden the rice crop failed. When the animal can no longer work it is killed, its flesh is eaten, and its bones and hide are exported. While it is alive its excrement is used for fuel. So, alive or dead, the bullock is an addition to the farmer's wealth. Meat forms part of the diet of nearly all Koreans, even dog flesh being preferred to going without this kind of food. Hogs and dogs are public scavengers, so there is always plenty of pork and dog meat to be had. It is often stated that the Japanese do not eat meat. While it is true that Japan has not raised beef animals in her own territory, she has imported meat, and there is hardly an important town in all Japan that does not have it for sale. All the official and merchant class use meat, and some prefer it entirely to a diet of fish and rice. Since Japan began to control Korea she has satisfied her desire for meat by importing Korean cows, using them for work animals and then slaughtering them.[20] Recently she began to import Korean calves to fatten them with rice bran for the slaughter-house trade. The demand for meat is increasing in Japan. Korea can raise some of the supply which Japan lacks; therefore it is reasonable to suppose that cattle raising will become a more important part of the Korean farmer's activities. Already a Japanese company is promoting this industry in Korea. The live cattle shipped into Japan have come most largely from southern Korea because it was nearest.

Northern Korea also is a cattle-raising country. In that section the business is a more independent industry than in the south. There are many miniature plains in valley bottoms on which small herds of cattle are kept in numbers sufficient to cause a panic in southern Korea. There is much land also in the north that is

* Concluded from pp. 756-769.

[20] *Commerce*, Jan. 15, 1914 (a Japanese trade association magazine published in Tokyo).

too hilly for any other use than grazing. The live animals exported from the north go to Asiatic Russia, but fat and bone, in the form of fertilizer, and the hides of the animals slaughtered in northern Korea all go to Japan. Here again is a business that is sure to increase. In Osaka, Japan, near Korea by water freight, there are seventy-seven leather factories whose annual product is worth $3,500,000. Japan cannot raise the raw material for these factories and has turned to Korea for the supply. The leather industry is as yet in its infancy in Japan, so with its growth will come a corresponding increase in cattle raising in northern Korea, for Japan's only other sources of raw material are India and the United States. She naturally prefers to buy from her own provinces, hence is encouraging cattle raising. A veterinarian has been established in each of Korea's political divisions to supply the needs and diseases of Korean cattle.

Although Korea has been raising cows for 3,000 years, dairying is not an industry. Milk, butter and cheese are unknown save to foreign residents, who import cheese and butter. There is little demand in Japan for these foods, so there is small likelihood of the immediate development of dairying in Korea.

Sheep Raising. Since so much of Korea is mountainous the question is often asked, why does Korea not turn her otherwise unproductive steep slopes into sheep ranges. In the south the mountain sides are either barren, or else covered with a coarse grass unfit for sheep food. Even if it were, it would not be fed to sheep, for it is far more necessary for fuel than sheep are for food or clothing. In the north the mountains are the lair of tigers, wolves and Chinese and Korean brigands, all of which would make short work of a sheepfold. The tigers are particularly dangerous. Even the villages of men must be protected by walls to keep out the beasts, yet every year the tigers take a heavy toll of human life. In the winter time when the tigers flounder helplessly in the snow, the villagers hunt them for their highly prized fur, but at all other seasons the tigers hunt the villagers. So between the lack of food in the south and the presence of beasts of prey in the north it is not surprising that in all Korea there are very few sheep.

Fisheries. A nation's food supply may come from the land by farming, or it may be taken from the sea by fishing. Japan is famous for making good a deficit in land food by an abundance of sea food. The waters surrounding Korea, especially off the east coast, abound in fish. Salmon, cod, sardine and herring[21] are the

[21] British Consular Report, 1911.

most familiar varieties. Both fresh and dried fish find a ready market in Japan. On journeys in Korea, overland shipments of dried fish, carried on men's backs from the northeast coast peoples to the interior and south, are a familiar sight. Korean waters have attracted Japanese fishermen for ages, but Korean hostility prevented them from making settlements. Now there are a thousand Japanese fishing colonies of three to four men each, strung all along the Korean coasts. These Japanese fishermen offer the keenest competition to the Korean natives. Although the number of Korean boats and Korean fishermen are twice the number of Japanese the annual income of the Korean boats is only one-half that of their rivals. This is due to the ancient, inefficient craft and gear employed by the Koreans. They are being taught to use a better boat and more modern tackle. The whale fisheries are entirely in the hands of the Japanese, and this is an industry worth $4,725,000 a year.[22] The reason for Korean backwardness in fishing is the same as that for her crude agriculture, the lack of incentive to do more than was actually necessary in order to live.

Mining. Next to agriculture the most important industry in Korea is mining. The former Korean government frowned upon all attempts to develop the mineral resources of the nation, but in periods of stress was induced to grant mining rights to American and French companies. Gold is the chief mineral product. It is found along the central western coast and in the mountains of the northwest, and also at points on the east coast opposite the west coast operations. As yet the mining has been of the placer type, washing the gold from river sands, yet the gold export is equal to one-third the value of all other exports. Without the probable future increase in mineral production it is difficult to see how Korea would be able to make both ends meet, for there is a heavy balance of trade against her. The Japanese have opened the mineral rights and have codified the mineral regulations. Four of the largest gold mines are owned and operated by Americans. There is also one large French company. All told there are 240 gold mining rights, but for the most part the operations are small and primitive, and partake of the prospector type. Quartz mining has not yet begun.

Gold is the only important mineral product, but Korea is known to contain deposits of coal, iron, graphite, silver, lead and copper. Of these there is one fair-sized coal operation on the central western coast. The coal produced amounts to 110,000 tons a year,

[22] Reforms and Progress in Chosen, 1910-11.

XUM

which is about one-third the output of the average American anthracite colliery. Although this coal field is insignificant, judged by our standards, it is far more important to a country so destitute of fuel as is Korea. The Korean coal is powdered anthracite and goes almost entirely to the naval briquetting station in Japan.[23] A few briquettes, manufactured on the coal fields, are sold in Korea. All the other minerals are as yet undeveloped. The iron ore must have been worked in former years, for there is an iron bell at Seoul, made from native ore, that is the third largest bell in the world. It was cast in 1396 and has hung in its present position since 1468. The signal for closing the city gates of Seoul is the ringing of this ancient bell. Korean tradition records that it was necessary to throw a living child into the molten metal to make it fuse, and that the wailing of this child is still heard in the tones of the evening curfew. There are indications of iron ore in many parts of Korea, but only as much as is produced in the least important American states is actually sent to Japan[24] and none is used at home.

Manufacturing. Manufacturing on the factory basis is lacking in Korea. There are a few home industries supplying hats, paper, leather, tobacco and straw matting. Garments are also made by the housewives, but there is no such thing as factory organization. As long as Korea stays in the control of the Japanese it is probable that manufacturing will remain an absent quantity, except for a few supply industries which can be most economically carried on near their market. Japan is fast becoming a manufacturing nation. She has no desire to set up a rival in Korea. It seems to be Japan's intention to use Korea to supply the raw materials which Japan will manufacture and then resell to Korea if necessary. Korea has no real basis for manufacture except the presence of raw materials. Her population is not pressing upon resources to the extent of compelling a new method of gaining a living other than farming. Power for manufacturing is almost entirely absent. There is no wood for fuel except in the scantily populated north, and the wood is too valuable to be used as factory fuel. Unless new coal fields are discovered, there is not sufficient coal for power use. Due to the large amount of rain falling in the summer season, stream flow is too irregular to warrant the use of water power or the development of electricity.[25] Unless the great dif-

[23] At Tokuyama.

[24] $159,000 British Consular Report on Japan, 1912. Missouri produced $153,000 in 1911; Maryland and North Carolina $161,000 in 1911. (Mineral Resources U. S. 1911.)

[25] Except at Gensan (Wonsan) on the northern coast.

ferences of tides on the west coast can be utilized for power, Korea lacks this fundamental for manufacturing. Korean labor is utterly lacking in mechanical ingenuity. The Korean people are too poor to demand manufactured goods. The Japanese market is supplied by her own mills, so Korean manufactures could not enter there. Cotton cloth is the only thing which could be sold in large amounts in the Korean home market, but Japan is able and anxious to meet this need by Japanese-made goods. So, for a long time to come, Korea seems destined to remain a producer of raw material, and not a fabricator.

Communications. As long as Korea remained an independent nation there was no development of internal communication. Each particular section remained nearly self-sufficient and, if crops failed, famine ensued. There were no railroads, no highways, no canals, no telegraphs nor telephones. All carriage of goods was on the backs of bullocks, ponies or men, and the man was the pack animal most often used.[26]

Railroads. The first railroad connecting the capital, Seoul, with its port, Chemulpo, was built in 1901 as a war necessity. American rails and bridges were used in the construction of this first short line, and American firms also supplied the rolling stock. The track was standard gauge, a fact which makes Korean railroads to-day surpass the Japanese system, for in Japan the British engineered the first roads and built them narrow gauge. Later, Japan made her own roads of standard gauge, and so had two systems side by side. This has caused endless delays, annoyance and trouble in through freight shipments which have to be unloaded and reloaded every time the gauge changes. Korea escaped this difficulty by starting with a standard gauge road and making each addition conform to the road first constructed. It is now possible to send one car without change from St. Petersburg (Russia) or Pekin (China) to Fusan in the extreme south of Korea. The second railroad soon[27] followed the first and was constructed for a similar military reason. After the Russian war the first work of the Japanese was to open the country. They were actuated most largely by military motives, but the economic advantage was not lost to sight. Railroads were the first necessity. All the chief ports are now connected, and a trunk line runs nearly the whole length of the peninsula. By building[28] a bridge three-

[26] The package carriers almost became a pack peddlers' guild and performed a valuable service in the dissemination of information from place to place. The Korean "coolie" is very strong and is known to have carried as much as 500 lbs.

[27] In 1905. [28] Opened for traffic Nov. 1, 1911.

quarters of a mile across the Yalu River in the northwestern part of Korea the trunk line put Korea in direct rail connection with the Trans-Siberian Railroad and the railroad systems of China.[29] The southern terminus of the trunk line at Fusan therefore becomes the true end of a world route. To accommodate the traffic that will come as a result of this line Japan is planning and executing a large improvement in the harbor of Fusan. Harbor

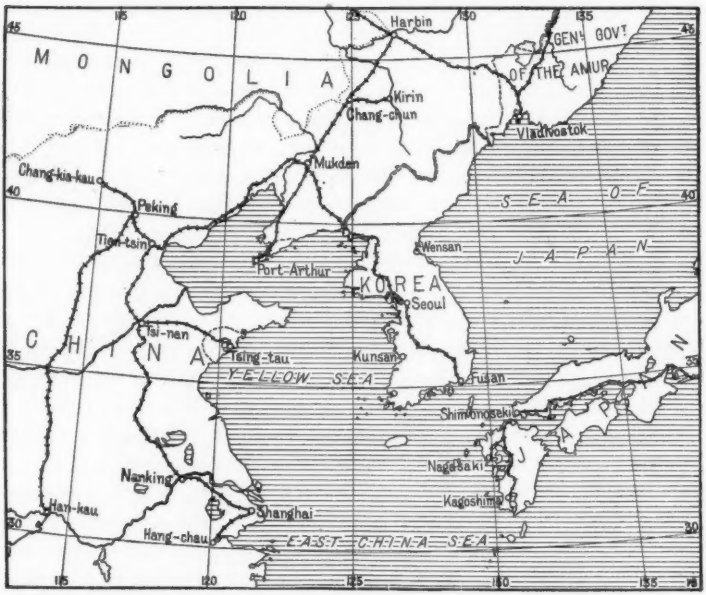


FIG. 4—Map of Korea, China and Manchuria showing the relation of the railroad system to Asia. See also Fig. 1: Map of Korea showing railroads, ports and cities (p. 757).

improvements are also in progress at the other great port of Korea, Chemulpo, in the center of the west coast, the port for the inland capital city, Seoul. On account of the shallow water off the west coast and the great tides and the silting of the harbor from the Han River, Chemulpo is to have the lock dock system.[30] Fusan on the south coast does not need this kind of harbor improvement.[31]

[29] Total length of railroads in Korea, 1910, 767 miles. (Japanese Year Book.)

[30] At present vessels must anchor three miles off shore and lighter freight to shore.

[31] Progress in Chosen, 1911-12.

Fusan is only 120 miles from Shimonoseki in Japan and frequent ferry service has been established between the two cities, so the Korean railroad gives Japan, as well as Korea, a land connection with all Asia and Europe. The Korean system is operated under government ownership and all the employees except the track laborers are Japanese. At present the railroads are under the administration of the army, an amusing reminder of which is seen in the conductors' uniform, every one having a short sword much in the way, but highly ornamental and useful in striking terror to the minds of the easily frightened Koreans.

Street Railways. Seoul, the capital, has an electric street railroad, which was one of the first to be installed in the world. This road was built when many progressive American cities were content with busses. A Korean diplomat had visited this country and on his return home so filled his Emperor with wonder at the wagons which ran alone, that he forthwith ordered these mystical things to be made so he could see them for imself. In 1885 the Edison Company built an electric plant at the capital. The opening of the road to traffic brought many peculiar scenes, women offered sacrifices to the God of the Cars, and all along the route people fell down in worship. At night citizens used the rails for pillows, and lost their heads in consequence. So common did this become that signs were placed on all the posts along the right of way warning folk not to sleep on the tracks. The Japanese have improved this old line and have extended it to reach the suburbs beyond the walls of Seoul.

Highways. Next to railroads, Japan has sought to better highway communication. Beginning at the capital and the two chief ports she plans for a system of roadways extending over the whole peninsula. In a country so mountainous this is an expensive, difficult task. Five hundred miles of highway have already been built at a cost of $5,000,000 and 1,400 miles are under construction. Telegraph, telephone and postal communication have also been increased.

Commerce. The foreign trade of Korea is almost entirely with Japan. This has always been the case, but, since the annexation, the share of Japan in both imports and exports has increased. In 1912, 81 per cent. of the exports were sent to Japan and 60 per cent. of the imports came from that country.[32] The little

[32] British Foreign Office Report, 1912.

XUM

import trade that Japan does not control is divided almost equally between the United Kingdom, China and the United States.[33] In a country undergoing rapid internal development it is not surprising that the imports far exceed the exports. The imports are almost entirely materials for railroad, bridge and roadway construction, agricultural improvements, and supplies for the Japanese garrisons, civil and police administrative works. The only imports of importance for the direct use of the Korean people are in cotton goods for clothing. That which Japan does not supply comes largely from the United Kingdom. The United States sells petroleum to Korea, in which we had a monopoly until the British Rising Sun Petroleum Co. threatened war. The Standard Oil Co. and this rival have now come to amicable agreement.[34] The United States also sells small amounts of flour to Korea. The exports are food products and raw materials which go to Japan.[35] The exports are valued at about $9,000,000, whereas the imports reach three or four times that figure. The difference is met by an export of gold bullion to the value of $3,000,000 to $5,000,000, and by loans without interest by the Japanese government to Korea. Although the revenue from Korea to Japan has increased from $3,000,000 in 1905 to $20,000,000 in 1910, it is hard to see just where Japan will get any financial benefit from Korea for a great many years to come. Although Korea offers room for the overflowing population of Japan and will eventually be of more economic importance, after all, the chief benefit which Japan derives from Korea is the strategic value of controlling a country which could threaten Japan's very existence were it in the hands of a hostile power.

Sociology

The Government. As long as Korea remained an independent nation the chief authority was vested in an emperor. He was advised by a cabinet of ten members, but the advisory group had no power beyond the mere preparation of resolutions and laws. Final decision upon all such matters rested in the emperor. Since the aristocracy had no choice of occupation but were expected to go into public office, the court of the emperor became very cor-

[33] Imports
United Kingdom, about 14 per cent.
China, about 10 per cent.
United States, about 8 per cent.

Exports
China, about 16 per cent.
Asiatic Russia, about 8 per cent.

[34] British Foreign Office Report, 1912. The Standard Oil Co. supplies 80 per cent. of the oil import.

[35] Imports and exports as in footnote 33.

rupt, because positions were obtainable, not by ability or service, but by favor or bribery. A public berth gave power, through which sufficient force could be exerted upon lower officials or upon the common people to richly support the office holder. Therefore the nobility eagerly sought those posts that offered the greatest opportunities for extortion. The administration of the central government in consequence became exceedingly vicious. To become a governor of one of the thirteen "to," or provinces, into which the country was divided, meant that a chance to secure rapid wealth had been obtained. The result was that local government was also inadequate and unprincipled. In the provinces, and more particularly in their minor subdivisions, the very topography favored poor government. Hill and valley succeed each other in such disorderly array that the nation is an aggregation of nooks. During the period of the empire there was no communication between these corners of the country except through Chinese pack peddlers. There were no roads or any other means of transportation. Whatever happened in each little remote place was unknown outside. As a result the provincial officials could engage in the most nefarious practices and resort to the cruelest exploitation without detection or check. Taxes were made confiscatory. Industry and thrift were awarded by imprisonment, and the fruits of extra effort snatched away by fines and penalties. No man did more work than necessity required, or acquired more wealth than the moment demanded. Habits of shiftlessness, laziness and profligacy became fixed, and the name "Korean" became a by-word of reproach in Asia.

Evils in a nation, like depravity in a man, can exist longer if they be secret. Publicity in the first case, like exposure in the second, often induces reforms. After the annexation, means of communication were established in Korea so that places formerly remote and unknown became connected with the rest of the world. Corruption could no longer hide itself. With the changes in government and transportation, dishonest administration became less possible. The building of roads, telegraph and telephones, that open formerly inaccessible places, pave the way for better government at the same time that they enlarge economic opportunity.

The government at present is in the hands of Japanese military officers. The Korean people have no voice whatever in the administration. In order to overcome opposition, Japan has recognized the titles of nobility of the aristocracy of Korea and is planning to give the people representation in the Japanese parliament.

XUM

Courts. Korean courts were formerly administered in favor of the man with the most money. The laws are now being codified, the unspeakable prisons reformed, and the whole judicial procedure made to conform to the justice of the Japanese home courts. One case, involving many missionaries and Christian converts in the charge of conspiracy, has attracted the world's attention to see if the Japanese judicial procedure was more just in the government reports than in actual practice. The case has not yet gone up to the higher courts for decision.

Currency. The money of Korea used to be in a most chaotic state. Since 1905 a state bank has been established with branches at the principal centers, and savings banks have been opened.[36] The former brass nickel and cash currency is gradually being withdrawn and Japanese money substituted. The nickel was a filthy, slimy coin. Cash was said to be a compound of sand, iron and dirt and so low in value that the change from a $2 bill would load a donkey.

Language. The language of Korea, called Unmum, is a mixture of Mongolian, Tartar and Chinese. It is very symmetrical and capable of expressing the finest shades of meaning very simply. It contains many mimetic or onomatopœic words, and is a sonorous vocal language, with climactic sentence, *i. e.,* verb at end. The alphabet is derived from Sanskrit and has 28 letters. Since the influence of China was felt in everything in Korea, Chinese was the language of polite society and of writing in general. But since the annexation, Chinese has ceased to be the official tongue. The Japanese language has replaced both the Chinese and Korean for all official correspondence, and is being taught to the Korean children in Japanese schools by Japanese teachers.

Schools. Before the establishment of the power of the men from Nippon, schools that reached the mass of the Korean people could not have been said to exist; but now the whole school system has been placed on a new basis. Primary schools have been established in the provinces, and higher schools in the principal cities. The most important action, however, has been the establishment of trade and industrial schools, agricultural colleges and model farms and experiment stations. The boys and girls now sent to school have shown surprising ability to learn quickly and easily. They make accomplished linguists and clever mathematicians. The young men are eager to learn business so as to buy

[36] 1907, savings banks, 4,284 depositors; 1910, 25,632 depositors.

goods direct from the producer and so eliminate the Chinese or Japanese middleman.

Religion. There are four large religious bodies among the Koreans. The Buddhists are the oldest sect. Between the tenth and fourteenth centuries, Buddhism was the form of worship sanctioned by those in authority, but a change in dynasty brought a shift in official cult. Buddhism was replaced by Confucianism. The Buddhist priesthood are to-day a discredited, poor and corrupt body. Confucianism brings with it the worship of ancestors. The reverence for the graves of the forefathers has hindered modern progress in several cases. For example, the first railroad was surveyed to pass through a region devoted to graveyards. Where the graves concerned were those revered by poor people, money was able to give the railroad a right of way,[37] but where the tombs of nobility and especially of the sacred imperial family were involved, the railroad had to seek another, more inconvenient and expensive line. The cemeteries scattered thickly through the few lands best fitted for agriculture have limited the full use of even the little ground that is unencumbered by hills and mountains. Ancestor worship and Confucianism are distinctively an upper class religion.

The great mass of the common people are believers in Shamanism, whose essential is an acceptance of the power of demons. Since most of these are malignant, the Korean spends much time in propitiating the evil spirits. Sorceresses and blind sorcerers are the priests of the demons. In 1900 there were one thousand sorcerers in Seoul alone, and $750,000 was paid in fees to them by the poor Korean peasants.

The Christian church has been making many converts since 1895. Missionaries connected with the Presbyterian body have come into some ill favor because of their alleged sympathy and activity in the cause of Korean independence. The one blot on Japan's record, since annexation, has been the summary imprisonment and hurried trial and conviction of Christian converts said to have been involved in a treasonable plot. The case is not settled yet, for it has gone over to the superior courts of Japan for retrial.

The readiness with which the Koreans accept Christianity may be explained on several grounds. Missionaries and others who have had a chance to know the people well, all comment on the fact that the Koreans adapt themselves to northern Europeans

[37] In twenty-six miles, 2,000 graves were bought at $1–$3 a grave.

XUM

and Americans more readily than do the Chinese and Japanese. It is easier to forget the difference in race with the Korean. The long years of oppression, under which the people suffered, prevented the development of the spirit of a strong nationality, and made them comformable to new influences more readily than if they had acquired a dominant national personality. The Christian religion, in its insistence on humility and its offer of hope to those wronged by tyranny, makes an especially strong appeal to the downtrodden; so the growth of Christianity among the Koreans is not surprising.

The People. The Korean people[38] are an excellent illustration of the influence of environment on character. In the northeastern part of the country the surface is much broken, agriculture is difficult, the winter climate is severe and the danger of attack from wild animals and bandits always imminent. The rigorous

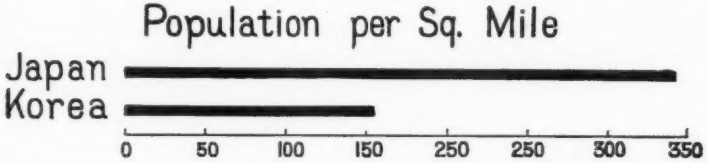


FIG. 5—See also Fig. 1 showing distribution of population in Korea (p. 757).

livelihood has caused a natural selection of vigorous manhood. The northern Koreans are industrious, brave, aggressive and progressive. Unfortunately for the reputation of the nation, this section has been little visited by foreigners, and the number of people living there is relatively small. Outsiders have come most in contact with the greater mass of people who live on the low, constricted coastal plains of the southwest. In that region the surface is less dissected, climate is softened by the presence of the warm Yellow Sea, food is easily obtained, and the danger of outside attack very much lessened. The people are not hardy, nor courageous, nor diligent. The world has formed the opinion that Koreans are cowardly, lazy, and dirty. They lack spirit because long years of injustice taught them the futility of resistance. Their word for work is "loss" or "misfortune" because the fruits of labor never enriched the laborer but swelled the income of the tax gatherer. They are dirty because they crowd into huts in too

[38] The number of people is variously estimated, but is generally conceded to be 13,000,000. The foreigners in Korea at the latest estimate are Japanese, 242,028; Chinese, 15,909; Americans, 565; British, 197; others, 211.

close proximity. The huts always remained small, because to increase the size of the dwelling was an indication of wealth, which invited imprisonment and extortion. Under protection, the Koreans are industrious, energetic, faithful and reliable.

The typical Korean is well built and taller than the average Japanese. The height of the men is accentuated by a high crowned horsehair hat and loose flowing garments. The whole population dresses in white or what was once white. The explanation of this universal custom is twofold, first the prosaic one, that Koreans have never learned the art of dyeing cloth. The traditional solution is that white is the badge of mourning in Korea. When a man's father dies, the man must wear white for three years, and if in the interval the mother also is lost, he must continue to wear white for three years after the expiration of the period of mourning for his father. If a member of the imperial household met with misfortune the whole nation was forced to wear white for seven years. It is supposed that a series of disasters in the royal household caused the people to wear white for so long a time that it became a custom.

The women have a peculiar garment resembling a cloak, with sleeves attached, which they wear over their heads and shielding their faces. This cloak is a mark of honor, for the story runs that once when the Emperor, unawares, had summoned a number of traitors to dinner, who planned to assassinate him during the meal, the women, learning of the plot, went to the palace, and concealing their heads in the officers' cloaks left in the hall, warned the Emperor of his danger. As a token of gratitude he decreed that the women should wear the cloaks always.

Women are treated as slaves. After marriage, which takes place at a very early age, they are confined to private apartments and not allowed to converse with the husband's guests. Concubinage is common. At the meals the men always eat first, and the women take what is left.

Food is eaten with great gusto; the more noise accompanying the eating the greater is the compliment to the cook. It is said that a mother will feed her boy all he can eat, then crowd more down his throat and tap him on his stomach to settle it. She then lays him on his back and fills him full. The whole nation overeats, and consequently nearly everyone suffers from dyspepsia and indigestion.

The houses have stone or dirt floors and are heated by flues from the kitchen passing under the floor. Outside the house is a

XUM

ditch where offal and refuse are allowed to lie and rot in the hot sun, or to drain into the well. In the hottest months the whole city is one reeking cesspool, so dysentery, cholera, typhus and typhoid rage.

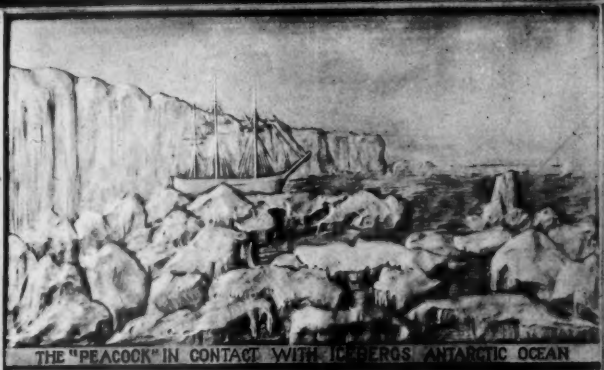
Conclusion

From the study just made it would seem that it was the political importance of Korea, rather than the economic advantage to be obtained, that actuated Japan in her desire to possess Korea. The country is in a strategic position in Asia, and although her future seems settled in whatever happens in the Far East in the time to come, Korea will have an important share of attention.

TABLETS IN MEMORY OF WILKES AND PALMER

Photographs of two bronze tablets that were placed, last summer, in the lower hall of the Society's house are here reproduced. These tablets, each 39 by 17 inches, were designed and made under the initiative of Councillor Edwin Swift Balch and the direction of Councillors Balch, James B. Ford and Grenville Kane, with the hearty approval and support of the Council. They commemorate distinguished contributions to Antarctic discovery by two of our countrymen: Lieutenant Charles Wilkes, who, cruising in 1840 for 1,500 miles along the coast of East Antarctica, in a vessel badly equipped, propelled by sail and almost unseaworthy, recognized the fact that he was facing the coast of an enormous land and named it the Antarctic Continent; and Captain Nathaniel B. Palmer, who is believed to have been the first to sight that part of Antarctica which lies nearest to South America and after whom Palmer Land in West Antarctica and the neighboring Palmer Archipelago were named.

Wilkes's hazardous voyage over an ice-strewn sea in high southern latitudes where gales, even in summer, are terrific was a very remarkable achievement. He found land which has been rediscovered by the Mawson expedition. Doubtless he sometimes mistook stretches of lofty ice wall for land. His sailing vessel *Vincennes* was not easily manageable in a stiff gale and he was often compelled to stand out from the ice or risk the destruction of his ship;



THE "PEACOCK" IN CONTACT WITH ICEBERGS. ANTARCTIC OCEAN

IN COMMEMORATION
OF
CHARLES WILKES.
LIEUTENANT U.S.N.

IN JANUARY AND FEBRUARY, 1840.
WILKES CRUISED FOR OVER 1500
MILES ALONG THE THEN UNKNOWN
COAST OF EAST ANTARCTICA
SINCE JUSTLY NAMED FOR HIM
WILKES LAND
AND ON HIS RETURN FROM
THIS MEMORABLE VOYAGE OF
DISCOVERY, ON MARCH 11, 1840.
ANNOUNCED TO THE WORLD
THE EXISTENCE OF THE
ANTARCTIC CONTINENT.

XUM

XUM

PALMERS LAND AS SEEN FROM THE SOUTH SHETLANDS

IN COMMEMORATION
OF
NATHANIEL BROWN PALMER
MASTER MARINER
AND
INTREPID EXPLORER
IN 1820-1821, PALMER PROBABLY
FIRST SIGHTED THE MAINLAND OF
WEST ANTARCTICA
AND CERTAINLY FIRST SAILED
ALONG A STRETCH OF ITS
COAST, AND THIS WAS
RIGHTFULLY NAMED FOR HIM
PALMER LAND.

XUM

but the long fore-front of ice wall, glaciers and icebergs could mean only that the continental coast which gave them birth lay behind; Wilkes recognized the fact that he was skirting the edge of a continental land mass and he called it the Antarctic Continent. "Wilkes's modesty," as Mr. Balch wrote in 1912, "prevented him from attaching his own name to his discovery, an omission which the sense of justice of historical geographers has fortunately rectified." As Dr. W. S. Bruce wrote in 1912, "Anyone who has carefully read Captain Wilkes's narrative must have felt that there was sufficient evidence for the American discoveries, and the writer, for one, has always upheld the view that those lands would be found to exist more or less in the position in which Wilkes charted them. The Mawson Australasian Expedition has proved, over a distance of more or less 1,200 miles, the existence of Wilkes Land, which has been disputed during the past seventy-two years, and has set up stations at the west and almost at the east end of it." On the Antarctic maps now produced by most of the map-making nations the name Wilkes Land appears.

The name Palmer Land also appears on most charts of that part of Antarctica south of South America. The name is printed in its correct place when it is shown on the north shore of the northern mainland of West Antarctica, as on the maps of Dr. Jean B. Charcot, the French Antarctic explorer. The mainland of West Antarctica, as far as the records show, was first sighted by Nathaniel B. Palmer of Stonington, Conn., and the land was named after him possibly by the Russian admiral and Antarctic circumnavigator Bellingshausen.

The American Geographical Society believes it to be eminently fitting that the great work of Lieutenant Wilkes and the notable achievement of the young Stonington sealer, Palmer, should be commemorated on its walls by these handsome tablets.

XUM

THE OPENING OF THE CAPE COD CANAL

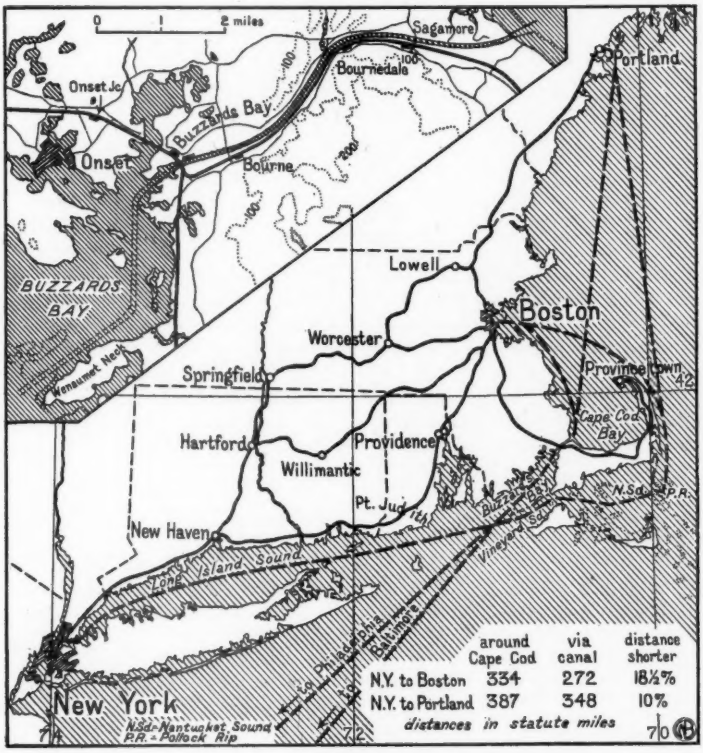
On July 29 the Cape Cod Canal was opened to traffic. By this important undertaking the sea route between Boston and New York is considerably shortened.

The canal severs the long hook "arm" of Cape Cod at the shoulder and leads from the head of Buzzard's Bay in an east-northeast direction into Cape Cod Bay. Its course lies through a natural depression in the moraine, which was already followed by the railroad from Boston to Provincetown. Its length from bay to bay is 7½ miles; the greater part of this distance was occupied by natural drainage, only about one mile consisting of higher ground, with a maximum height of 29 feet. Approach channels have been dredged, one 5 miles long on the Buzzard's Bay side and the other half a mile long on the Cape Cod Bay side, thus making the total length of the canal 13 miles. There is a breakwater 3,000 feet long on the northern side of the Cape Cod Bay end. The canal prism, in its typical cross-section, is 100 feet wide at bottom, 220 feet wide at the top and 25 feet deep at mean low water. The top and bottom widths are greater in the approaches and in two passing places within the canal proper. The canal is a sea-level canal. The difference in tide height between the two ends of the canal is at no time more than 5 feet, so that there is no obstacle on the score of currents. The maximum velocity, 3 miles an hour, cannot last for more than half an hour, and is therefore negligible. The canal is accompanied for the greater part of its length by a highway on each side and, in addition, on the southern side, by the Boston-Provincetown railroad. It is crossed by three lift bridges, one carrying the railroad and the two others highways. The canal is illuminated throughout its length on the street lighting plan.

The canal affords a route considerably shorter and safer than the existing route between New York and Boston, which goes up Long Island Sound and passes through Vineyard and Nantucket Sounds around Cape Cod to Boston. The new route is coincident with the old as far as Pt. Judith; from here it diverges and ascends Buzzard's Bay, passes through the canal into Cape Cod Bay and then skirts the coast of Plymouth County to Boston. The distance from New York to Boston around Cape Cod is 334 statute miles; via the canal, 272 miles[1]—a saving of 18½ per cent. But shortening of distance is not the only advantage gained: the canal route will afford protection from the risks of the outside route. Storms and fog have given this region its name of "the graveyard of ships." In the last fifty years the number of vessels wrecked here has averaged, it is said, thirty-five a year. The fog records for Pollock Rip, off the "elbow" of Cape Cod, during 1909, 1910 and 1911 average 1082 hours of fog per annum; the corresponding values for the western and eastern entrances of the canal were respectively 277 and 564 hours.

[1]The distances given in publications on the canal frequently vary. The distances given here and in the subsequent table are based on measurements made on U. S. Coast and Geodetic Survey charts Nos. 6, 7 (now 1107), 8 (now 1108), 112 and 1000, or are taken from "Table of Distances in Nautical and Statute Miles via the Shortest Navigable Routes," *U. S. Hydrographic Office Publication No. 117*, Washington, 1912.

The commerce passing around Cape Cod is estimated at 25,000,000 tons annually. This consists mainly of raw materials, coal and lumber predominating. The carriers are mainly towed barges and cargo steamers. The average speed of the barges is seldom more than 4 or 5 miles an hour. As a 3,000-ton barge—commercially the most advantageous size—can pass through a 25-foot canal at 10 miles an hour without damage to the canal prism, this class of traffic will suffer no delay from having to slow down. By using the canal, the



Alternative routes available between New York and New England ports since the opening of the Cape Cod Canal. Scale, 1:3,600,000. The through railroad lines between New York and Boston or Portland are also shown.

The inset shows the canal in detail, based on a map kindly supplied by the Cape Cod Construction Company.

barges with West Virginia coal plying between Newport News and Boston will, it is said, save enough time to make twenty-seven instead of the usual twenty-four trips a year each way. It is naturally this freight traffic which is mainly expected to use the new route opened up by the canal; nevertheless passenger travel may be affected by it. The main routes that come into consideration are

between New York and Boston and New York and Portland, the former operated by the Metropolitan Steamship Line, the latter by the Maine Steamship Line, both of which are subsidiaries of the Eastern Steamship Corporation; and between Chesapeake Bay ports (Baltimore, Norfolk, Newport News) and Boston and Philadelphia and Boston—lines all operated by the Merchants and Miners Transportation Company. On inquiry, the Society is informed by these two companies that their vessels are not as yet, however, making use of the canal. The comparative distances, in statute miles, on these routes outside of Cape Cod and via the canal are summarized in the following table:

	AROUND CAPE COD.	VIA CANAL.	DISTANCE SHORTER.
New York—Boston	334	272	18½
New York—Portland	387	348	10
Philadelphia—Boston	547	489	10½
Norfolk—Boston	593	535	10
Newport News—Boston	594	536	10
Baltimore—Boston	736	678	8

The construction of the canal—an undertaking which was discussed as early as 1697 by the General Court of Massachusetts, and whose strategic value was urged by Washington during the Revolutionary War—was carried out by a private company, the Cape Cod Construction Company, agent for the Boston, Cape Cod and New York Canal Company. It took seven years to build and cost $12,000,000. The Society is indebted to the company for much of the information here presented and for the gift of a detailed map of the canal, from which the inset on the accompanying map has been prepared.

GEOGRAPHICAL RECORD

NORTH AMERICA

Coal Mining Breaks all Records. The Geological Survey reports that the United States coal output for 1913 was 570,048,125 short tons, which is more than double the production of 1900 and more than eight times the production of 1880. The value of the coal mined in 1913 is given as $760,488,785. Twenty-three of the twenty-nine coal producing states show increased production and only six decreased production. The decrease in Colorado was due solely to labor troubles. Of the states showing increased yield twelve made record production and Pennsylvania broke records in both bituminous and anthracite output.

The International Exposition at San Francisco. President Charles C. Moore, of the Panama-Pacific International Exposition, announces that events have proved the wisdom of the official decision not to postpone the opening of the exposition. Assurances have been received from France, Italy, Turkey and Japan that they will participate as promised. The Netherlands have added $300,000 to their original appropriation. Italy is erecting its building. The Exposition will lose some of the promised exhibits from Europe, but by no means all of them. Both Germany and Great Britain will be represented by individual exhibitors or by associations. There is a large demand for space from the manufacturers of this country, of South America, and of the European nations not at war. Ninety-two per cent. of the work of preparation for the opening is completed and the formal opening will occur on Feb. 20 prox., as promised.

Deep Boring at Spur, Texas. In the northwest part of Texas, east of the Pecos, the formations are nearly horizontal. This structure persists over the entire plains from the north end of the Panhandle to a line joining San Angelo and Pecos on the south. The area extends 330 miles from north to south, 170 miles from east to west and covers a fifth of the area of the state. It is fortunate for our knowledge of the stratigraphy of this region that a deep boring has been made not far from the central part of the area. Some large land owners in search of water for the town of Spur carried out the enterprise. Unfortunately for them, water was not found and the hole was abandoned in November, 1913, at a depth of 4,489 feet. The strata explored by the boring consist of three well marked divisions. The upper 1,250 feet are red sands, clays, marls, beds of gypsum, anhydrite, and salt in different degrees of purity and intermixture. Three beds of pure salt, ten, five and nine feet in thickness, lie between 570 and 741 feet below the surface. The succeeding 2,850 feet consist of dolomite with strata of anhydrite, sandstone and shale. The lowest 289 feet consist of limestone and shale. (Condensed from *Bull. Univ. of Texas No. 363*, 1914.)

Lectures on the Climatology of the Eastern Hemisphere. The programme of the Department of Geology and Geography of Harvard University includes this year, for the first time, a course of about forty lectures on the climatology of the Eastern Hemisphere. This course, listed as "Meteorology 5," is parallel with two other half-courses on the climatology of North America ("Meteorology 3") and on the climatology of South America ("Meteorology 4"), respectively. The object of the new course, which is designed particularly for students of geography, botany and history, and for others who wish to gain a general view of the climatic factor in the physical environment of man in the Eastern Hemisphere, is to sketch in outline the

XUM

controls and broader characteristics of the climates of that hemisphere with special reference to the relations of these climates to human life. The broader geographical features are discussed as a basis for the study of the climates. The larger controls of climate over population, habitability, history, crops, occupations, travel and transportation, and health are considered, rather than the minuter details of the local climates. During the present winter the influence of the weather upon military operations in Europe will receive special attention. With the addition of this new course to its list, Harvard is now able to offer its students instruction in the climatology of all parts of the world. These courses in climatology are given by Professor R. DeC. Ward.

Publications of the Weather Bureau. A change in certain of the publications of the Weather Bureau began on Jan. 1, 1914. The *Monthly Weather Review*, which, since July, 1909, has contained comparatively few papers of general interest, being chiefly a collection of climatic data, has now returned to something of the scope and character which it had before that time, and which gave it a well-recognized position among the meteorological journals of the world. It was, in fact, recognized as representing American meteorology, although the *American Meteorological Journal*, from 1884 to 1896 did a most valuable work along somewhat similar lines. No one in this country could be found so well equipped for the position of editor of the new *Monthly Weather Review* as Professor Cleveland Abbe, the mainstay of American meteorology for nearly fifty years. Professor Abbe brings to his task a rich store of meteorological and physical knowledge which long experience and diligent labor have given him.

Coincident with the change in the character of the *Monthly Weather Review* came the suspension of the *Bulletin of the Mt. Weather Observatory*, established in 1907, and since then devoted to the more technical meteorological papers. The new *Review* is arranged in six sections, dealing respectively with aerology, general meteorology, forecasts, rivers and floods, bibliography and weather of the month. It is safe to say that this publication, which will hereafter contain also such technical studies as have been appearing in the *Bulletin of the Mt. Weather Observatory*, will be indispensable to all workers in the science of the earth's atmosphere. R. DeC. Ward.

Variations in Rainfall in California. A study of the variations in rainfall in California, made by William Gardner Reed, of the University of California, and presented at the meeting of the Cordilleran Section of the Geological Society, April 11, 1913, was published in the *Monthly Weather Review* (Nov., 1913). The period covered is 1880-1910. The number of stations is about thirty; the object of the inquiry was to determine the relations of wet and dry periods and to ascertain whether a periodicity of wet and dry seasons exists. That the seasonal precipitation for stations in California varies widely has long been well known, and, in some instances, there is a correspondence of dry and wet seasons in different parts of the state. The author's general conclusions are: (1) the amount of rainfall in California varies within wide limits; (2) in a general way, the variation is similar in character but not in amount throughout the state; (3) variations more or less similar in character and amount are to be found in each of four districts for which data are available; (4) the period of oscillation of the seasonal amounts is longer south of lat. 35° N. than north of it; (5) the "wet" year, 1889-90, and the "dry" year, 1897-98, were nearly or quite state-wide; (6) careful analysis of the data, and a rigid treatment of the results, are necessary before safe conclusions can be drawn regarding oscillations in California rainfall. Mr. Reed's study is one of a type which should be carried out in each state. The more such details of rainfall are studied, the more we shall be in a position to correlate crops and rainfall, and the more effective and practical will become our climatological knowledge. R. DeC. Ward.

The Weather and the Corn Crop. Investigation of relations between weather and crops, especially such as help towards a forecast of the

probable crop yield on the basis of weather conditions previously noted, will always have great economic, as well as purely scientific interest. Professor J. Warren Smith, of the U. S. Weather Bureau, stationed at Columbus, O., has studied "The Effect of Weather upon the Yield of Corn" (*Monthly Weather Review*, Feb., 1914), and finds that the controlling weather factor is rainfall. It is noteworthy that "the critical point of growth of corn during which favorable weather will cause a large crop, and unfavorable weather a short crop, is comparatively brief." July rainfall has much more effect upon the field of corn than that of any other month, and the rainfall from mid-July to mid-August is more critical than that for any other period of equal duration. The larger the rainfall for the ten days following the date of blossoming, the larger the yield, and if the rainfall is small during these ten days a high temperature has a very unfavorable effect. Careful study of weather conditions up to August 10 makes possible a close estimate of the probable yield of corn. Rainfalls of one-half inch or more are more important than falls of less amount.

R. DEC. WARD.

Forest Fires and Weather Forecasts. Forest fires are one of our most serious problems in connection with our national conservation policy. Forest fires depend very largely upon weather conditions. Therefore, forecasts of weather which is favorable for the occurrence and spreading of such fires should be of great value in enabling us more successfully to prevent and check them. Mr. E. A. Beals, District Forecaster of the Weather Bureau at Portland, Ore., has made a study of "The Value of Weather Forecasts in the Problem of Protecting Forests from Fire" (*Monthly Weather Review*, Feb., 1914). Our largest and most destructive forest fires occur with prevailing cyclonic winds over a large area, but as most of our standing timber is in mountainous districts, mountain and valley winds become important controls. The author has selected four great forest fires for special detailed study, in order to see whether the winds might not have been forecasted far enough in advance to have made possible a more effective fight against these disasters. Numerous weather maps illustrate the weather conditions preceding and accompanying these fires. Strong winds, just before, during, and a short time after the fire passes a given place, are among the most striking features. The weather maps show no conditions sufficient to cause extraordinary winds, and the conclusion is that the fires themselves produced them. The velocity of such winds cannot, however, be predicted by a forecaster, for that depends upon local conditions, the size of the fire, etc. The general conclusion is that much assistance may be gained by an intelligent use of the facilities offered by the Weather Bureau, "but where forests are situated near the sea, or in a mountainous country, there are so many local controls to wind movement that much will have to be left to the man on the ground."

R. DEC. WARD.

Through Passenger and Freight Service on the Grand Trunk Pacific. Through service on this new transcontinental railroad began in the second week of September. Track-laying was completed in April last, but through service was delayed for several months in order to place the road-bed and bridges in first class condition. Prince Rupert, the Pacific terminus of the railroad, is now in direct rail connection with eastern Canada and the United States. A new avenue of commerce has been opened to Canadian agriculture and industry.

Geology of Bermuda. Mr. L. V. Pirsson, Professor of Physical Geology in the Sheffield Scientific School, Yale University, has a paper in the *American Journal of Science* (Vol. 38, September, 1914, pp. 189-206) on the geology of Bermuda as revealed by a deep boring recently sunk by the owners of the Princess Hotel who hoped thereby to secure additional supplies of fresh water. This hope, of course, failed to be realized and the bore hole was abandoned after it had been carried down to 1,413 ft., where it terminated in solid lava. The paper includes a diagram of the boring showing a geological section, from which it is seen that three zones of essentially different materials

XUM

were penetrated. First were the soft, chalky Bermuda limestones; second a layer of soft oxidized volcanic matter, yellow to brown in color; and third, fine compact lavas, dark gray in color, which persist to the bottom of the boring. The limestone is soft above sea level, somewhat harder below it and extends to a depth of 380 feet. The zone of oxidized material ends about 600 feet below the surface. Professor Pirsson suggests that this oxidized material represents the product of land waste. If this theory is admitted, the conclusion follows that Bermuda was once an island composed of volcanic rocks rising above the level of the sea which has been entirely cut away by the erosive action of the waves. At the bottom of the boring and up to 700 feet, lie the original lava flows which built up the cone, unoxidized because the rocks had been protected by the sea from the work of the atmosphere.

"Bermuda Island has been thought to be situated upon the apex of a volcanic mountain mass, and Verrill has made some suggestions as to its size, slopes, and probable history, but until the present boring was undertaken, there have been no direct facts which would prove this. Other than the statements and suggestions of Verrill, so far as the writer is aware, there has been no attempt made to consider its form and size in this connection. It would seem of interest to do this to obtain some data for comparison with other volcanic masses of a similar nature and situation."

A sketch map of the Bermuda volcanic mass is introduced. This indicates that, on the sea floor, the volcanic base on which the islands and the neighboring Argus and Challenger Banks stand, extends in a northeast and southwest direction some 90 miles as an elongate ridge whose greatest breadth may be some 25-30 miles. At the sea level it has been cut away to a platform which at the 100 fathom line has a length of about 32 miles and a width of 16 miles. Southwest of it are the Argus and Challenger Banks, rudely circular in shape, about 5-6 miles in diameter and the same distance from each other and four miles from the main platform. It seems clear that they represent subordinate volcanic cones that have also been cut away by action of the sea.

If it is assumed that the main platform represents the truncated top of a single volcanic peak and if the profile is continued upward by the dotted lines, which Professor Pirsson shows in Fig. 2, then this peak, he estimates, would have risen 11,500 feet above the present sea level or about 26,000 feet above its base on the sea floor. This compares with Hawaii, whose peak reaches a height of 30,000 feet above the ocean bottom, and Samoa, 25,000 feet. It is quite as probable, however, that this platform was cut through several coalescing volcanic cones and in this case the height would not have been so great. Dr. Vaughan says it appears safe to assign an Eocene or pre-Eocene age to the Bermudian volcanic activity. Professor Verrill, of Yale University, suggests that the volcano was completed or formed during the Triassic or at its close and correlates it with the igneous outflows which marked this period along the North American coast. Professor Pirsson comments that the volcano may date from Triassic time, "but it should be observed that the diabases of the Triassic are a feature of the border of an entirely different earth-segment from the one on which the Bermuda volcano is situated, one which has had a very different geological history and that they made their appearance while the region was undergoing tectonic movements of which we have no knowledge in the Bermuda area."

CENTRAL AMERICA AND WEST INDIES

Official Opening to Traffic of the Panama Canal. Commercial traffic between the Atlantic and Pacific Oceans through the Panama Canal was inaugurated on Saturday, Aug. 15, by the Government steamship *Ancon,* which made the trip from the Atlantic to the Pacific in approximately nine hours. The *Ancon* carried, as guests of the Secretary of War, about 200 persons. Eleven commercial vessels passed through the canal on the following day and also the Peruvian torpedo destroyer *Teniente Rodriguez,* the first war vessel to use the waterway.

ASIA

Padre Murillo Velarde's Map of the Philippine Islands, 1734. In an article published in Paris in the *Bulletin géographie descriptive and historique,* for 1897, Mr. Gabriel Marcel called attention to a rare and important map of the Philippine Islands, compiled in 1734 by Padre Murillo Velarde. Only two copies preserved in the Bibliothèque Nationale at Paris were known to Mr. Marcel. One of these only is perfect. Fortunately, there exists another complete and perfect copy in the Division of Maps and Charts of the Congressional Library at Washington.

The importance of Velarde's map is that it may be regarded as the most successful attempt of the time correctly to delineate the Philippine Islands. It was compiled from actual observations and the best data attainable. It was engraved at Manila by a native artist, as is shown by the following inscription found in the lower right-hand corner: "Le esculpio Nicolas de la Cruz Bagay Indio Tagalo in Man-la-ano 1734." Regarding this Filipino engraver, we find in a work entitled: "Noticias sobre la imprente y el grabado en Filipinas," published at Madrid in 1893, by Dr. Pardo de Tavera, that he was "a Tagal Indian, a printer and an author, who seems to have been the most expert engraver and topographer in Manila." De La Cruz also engraved in 1744 a reduced copy of Velarde's map of the Philippine Islands, a copy of which is also preserved in the Library of Congress.*

Mr. Marcel says that Padre Velarde was born at Villa de Laujar in 1696, entered the Society of Jesus in 1718, and soon left for the Philippines, where he was successively professor of theology and law at Manila, rector of Antipolo and inspector of missions at Mindanao. He was a very learned man, who devoted himself to the study of the Indian languages and was fond of historical and geographical studies, as is shown by his History of the Philippines, and an historical geography in ten volumes, published at Madrid from 1752 to 1762. With reference to the origin of the map, Padre Velarde informs us in the *Sentir,* which he wrote for the Chronicle of Juan de San Antonio: "In 1733, I was ordered by His Catholic Majesty, to compile the map of these islands, and I published it in 1734. In it, I marked as many of the villages, capes, bays, harbors, rocks, straits, rivers, forts, distances, as I could, considering the scale of the map and the difficulty of the undertaking."

The map is on two large sheets, measuring each 43 x 14 inches; the lateral bands, 43 x 9½ inches each. In the lower left-hand corner a cartouche gives a short account of the government of the Philippines, with statistics of 142 villages. To give an idea of the commercial and naval activity of the Philippines, Padre Velarde scattered over the waters numerous pictures of vessels of various sizes and types, the routes followed by the galleons being indicated by means of double lines. Numerous names of capes, bays and rocks, as well as the names and location of tribes, provinces and villages are given. In "Nueva Castilla o Luzon," three of the largest rivers are delineated in their entire course, the "Rio Tajo" flowing northward, the "Rio Grande" and "Rio Chiquito" flowing into Manila Bay. Among the various tribes located on the map are the "Ygrotes gentiles, Calingas gentiles, Negros gentiles in the island of Luzon." In Mindoro island, we have the "Manguiares gentiles." This early authentic geographical nomenclature is of interest, and makes Padre Velarde's work a document of much import in the historical geography of the Philippines.

The illustrations in the two lateral bands give characteristics views of the natives and their country. The band attached to the right margin contains, besides two pictures, a map of the island of Guam, entitled: "Ysla de Gvajan," showing Agaña, Asan, Pago, Merizo and other towns; a detailed plan of Manila, showing the old city walls with cannon, the quarters reserved for natives, and twenty-six reference numbers referring to important buildings and places, among them being old Fort Santiago, the Cathedral, destroyed by an

*This admirable, reduced reproduction by De La Cruz of Padre Murillo Velarde's map (36 x 21 inches), in colors, is included in the Atlas van Homan, 1760, and is in the collections of the American Geographical Society.

XUM

earthquake in 1863, the "Sto. Domingo" Convent, etc.; a map of Samboagan, which is the earliest one known to have been drawn on so large a scale; and a well-executed plan of Cavite. Mr. Marcel characterizes Padre Velarde's map as "a contribution to the artistic history of the Tagals, one of the rarest productions of the Philippines, and a cartographical monument of great rarity, almost unique." O. WELTI.

AUSTRALASIA AND OCEANIA

German Men of Science Detained in Australia. Dr. A. Penck, professor of geography at Berlin; Dr. F. von Luschan, professor of anthropology in the same institution, and Dr. J. Walther, professor of geology and paleontology at Halle, accepted invitations to attend the Australian meeting of the British Association. The war broke out while the meeting was in progress and these gentlemen, as well as a number of other German men of science, were recently reported to be still in Australia. Dr. Penck, however, was reported, on Oct. 24, to have arrived in London.

POLAR

ANTARCTIC

Antarctica and Some of Its Problems. The *Geographical Journal* (June, 1914, pp. 605-630) prints a most suggestive paper under this title by Prof. T. W. Edgeworth David, Professor of Geology, University of Sydney, from which the following data are taken:

The area of Antarctica has been estimated by Dr. W. S. Bruce at over 5,000,000 square miles. Its mean altitude, the greatest of any of the continents, has been roughly calculated at about 6,000 feet, including its ice cap. If this were removed the mean altitude would be reduced by perhaps 1,000 to 2,000 feet. The coast line, omitting minor indentations but including the seaward boundary of thick, fast ice, is not less than about 14,000 miles long. Only about 4,000 miles have been even approximately explored and only about 2,500 miles in moderate detail. Little is known of the actual boundary between land and sea-ice for about 11,500 miles. It is difficult to define this unknown boundary by oceanographical survey, unsupported by inland sledge parties, because old pack ice keeps ships so far from the true rock coast that it is often invisible from the ship. Mr. Wild, of Mawson's expedition, found that, in Queen Mary Land, the Watson Glacier projects over 120 miles into the sea. The Ross Barrier extends, at a maximum, about 400 miles seaward of the true rock coast at its apex.

Portions of the Antarctic coast that are moderately well known may be divided (1) into more or less high rock coasts, (2) coasts with occasional nunataks and (3) ice coasts. Of these three principal types of known coasts about 2,500 miles are rock coasts and about 1,000 miles are nunatak coasts. The third type of coast—land barrier ice where the ice forms a sea-cliff resting on a rock foundation, and shelf ice where the ice projects some distance from the shore seaward—is the most characteristic feature of the Antarctic coast. It is, of course, a false coast in relation to the true outline of the land and in some cases is hundreds of miles in advance of the true coast.

With regard to mountain ranges, Dr. W. S. Bruce has given an approximate forecast of the probable positions of the chief mountain ranges of Antarctica. Dr. Mawson adopts Bruce's view that the great rock-faulted ranges of South Victoria, with their absence of folding and Atlantic type of eruptive rocks, are coincident with the highland described by Charcot at Terre Loubet, Terre Fallières, Terre Charcot; by Arctowski near Bransfield Strait, Gerlache Channel, etc.; and by Nordenskiöld, Gunnar Andersson, etc., near Hope Bay, Snow Island, Seymour Island, etc. The last area has considerable development of Jurassic rocks, comprising variegated tuffs and richly fossiliferous plant horizons. The latter are associated with igneous rocks of a very marked Pacific

type and the authorities mentioned, and others, agree in regarding this western extremity of the Antarctic Continent as a direct continuation of the South American Andes; and they consider its whole structure as distinctly of Pacific type.

There are grave difficulties in the way of connecting the Antarctic horst of Ross Sea with the Andean fold ranges of Antarctica. Geographically this is the greatest of unsolved Antarctic problems. The great question is, are these two ranges one and the same or does the horst continue in the direction of Vahsel Bay at the head of Weddell Sea, where the horst may have become so low that it loses itself in relatively small nunataks. If the horst follows the latter direction, Penck's view of a strait from Weddell Sea to Ross Sea, cutting Antarctica in two, will prove to be correct.

The journey of Amundsen to the South Pole has confirmed Bruce's views in regard to mountains stretching from King Edward VII Land to the Antarctic horst.

Professor David also deals with the inland ice, notes that Amundsen crossed the ice divide, 11,000 feet above sea level, and calls attention to the importance of the further tracing of this ice divide and subordinate divides so as to define the chief ice drainage basins. The greatest thickness of the ice yet measured is that of the Drygalski ice barrier tongue, about 2,000 feet; but perhaps the inland ice is thickest where it is dammed back against the western side of the Ross region horst, and there it may be 5,000 feet thick. Probably, wherever there is a continuous downward slope seaward of the rock surface on which the ice rests, the thickness of the inland ice does not exceed 2,000 feet; but where tectonic sags and *senkungsfelder* exist, so as to impound the ice, its thickness may be much greater.

The author discusses the Nansen, Ross and Kaiser Wilhelm II Barriers and the geology of the continent. He referred to the probability that the growth of the Antarctic barriers is due to glacial tongues pushing out over the seas and joined together by snowfall, thus uniting the isolated tongues into a coherent whole. Many interesting oceanographic problems await solution, submarine ridges and banks will in time be traced, many soundings and temperatures are needed in the neighborhood of great barriers and glacier tongues and also deep as well as surface current observations. Professor David's remarks on meteorology are here quoted entire:

"In meteorology there is a grand field for research. Dr. Bruce has pioneered the way in West Antarctica, and as the result of his South Orkney observatory, and the later observations established by the enterprise of the Argentine Government, Dr. R. C. Mossman has lately shown that it is possible to predict the rainfall for sub-tropical Chile by knowing the barometric pressure in the South Orkneys. A high barometer there means that the Weddell Sea is iced over. A severe season with much sea-ice in the Antarctic appears, therefore, to be causally connected with a high barometric pressure, and this high pressure drives the low-pressure rainy belts further north than usual, and this gives sub-tropical Chile a good rainfall. Mossman has further shown that there is a remarkable coincidence between the height of the water of the Paraná River and that of the barometer in the South Orkneys. Mawson's wireless and meteorological station at Macquarie Island, which has daily been transmitting the weather elements to Australia and New Zealand, has proved of such value for understanding weather conditions that the Commonwealth Government have decided for the present to maintain the station at their own expense.

"It is hoped that, in time, a causal connection will be traced between the condition of the ice near Ross Sea and the position of the rainy belts over Australia and New Zealand. With a more detailed knowledge of the oceanography, glaciology, and meteorology of Antarctica, the whole cycle of weather conditions, not only in the Southern Hemisphere, but even north of the equator, will become much clearer. When one thinks of the financial losses, sufferings to man and beast, even disastrous shipwrecks that may be averted by reason of this fuller knowledge, one cannot but feel that, apart from the gain of noble traditions and high sentiment, Antarctic exploration, with all its hazards and all its tragedies, is more than justified by its solid additions to the sum of human knowledge."

XUM

ANTHROPOGEOGRAPHY

Wet Bulb Thermometer Readings and Tropical Colonization. Investigations have been made by Vincent, Lancaster, Tyler and others of the effects of different combinations of air temperature and relative humidity upon human comfort and health. The subject has also attracted the attention of psychologists, Professor E. B. Titchener, of Cornell University, having recently written upon "The Psychophysics of Climate." Professor J. W. Gregory also presents a paper on the wet-bulb thermometer and tropical colonization (*Journ. Scot. Met. Soc.*, Vol. XVI, No. 29). The view that the tropics are injurious to health is prevalent, but the explanations of the fact are generally unsatisfactory. While heat is regarded as one of the principal factors in tropical diseases, it is recognized that no locality with a dry climate has a temperature so high as to be injurious to health. The hottest districts are often the most healthful. The healthfulness of tropical localities does not depend upon diurnal or annual ranges of temperature, and moisture is not necessarily injurious. The latter is, indeed, beneficial for some constitutions, but heat and moisture combined may be harmful. Experiments appear to indicate that "the industrial development of any locality where the wet-bulb temperature exceeds 80° will be almost and, if it exceed 88°, quite impossible." But statistics supplied to the author of this paper by the London Meteorological Office show that such high wet-bulb temperatures do occur in well-populated localities. The author regrets that the distribution of such temperatures is not well known. During part of the time when Professor M. W. Harrington was Chief of the U. S. Weather Bureau, wet-bulb 8 A. M. readings were printed on the Washington daily weather maps. In his "Handbuch der Klimatologie," von Hann recommends the inclusion of these readings in regular climatological tables. The *Annual Summary of the Australian Monthly Weather Report* for 1910 contains monthly wet-bulb isotherms from 9 A. M. observations. R. DEC. WARD.

OBITUARY

ALFRED JOHN JUKES-BROWN. This well-known geologist, formerly connected with the Geological Survey of England, died on August 14 at the age of sixty-three years.

DR. H. J. JOHNSTON-LAVIS. Dr. Johnston-Lavis, Professor of Vulcanology in the Royal University of Naples, was killed in a motor accident at Bourges early in September. He was born in London in 1856. He first attracted wide attention by his studies of Vesuvius and the large, detailed map he made of the volcano and its more recent lava flows.

GEOGRAPHICAL LITERATURE AND MAPS

(INCLUDING ACCESSIONS TO THE LIBRARY)

BOOK REVIEWS AND NOTICES

(The size of books is given in inches to the nearest half inch.)

NORTH AMERICA

Lake Michigan and the French Explorers. By E. P. Morton. (The Great Lakes Series.) 104 pp. Ills. Ainsworth & Co., Chicago, 1914. 7½ x 5½.

Tells well for young readers the story of the lake and the early history of its exploration and the settlements on its coasts.

Permo-Carboniferous Vertebrates from New Mexico. By E. C. Case, S. W. Williston and M. G. Mehl. 81 pp. Map, ills. Carnegie Inst., Washington, D. C., 1913. 12 x 9½.

The area in which these palæontological researches were prosecuted lies in north-central New Mexico in the modern valley of the Chama River. The student of the fossil remains of the life of this remote part of the Southwest will find much of interest in this volume. To geographers it will have quite another appeal. The present surface of our land masses is a resultant. Known and measurable forces have been acting for certain periods of geological time, of epochs and ages, upon a former land mass. The better we comprehend the extent of the former land mass the better will be our geography as the final chapter of a history measurable by the life of the world. The more we know of the remains of animal life of any geologic period the better are we able to reproduce the geography of the past out of which the geography of the present arrives by evolution under natural law.

The Indian War of 1864. Being a Fragment of the Early History of Kansas, Nebraska, Colorado, and Wyoming. By Eugene F. Ware. xi and 601 pp. Ills. Crane & Co., Topeka, Kan., 1911. $1.50. 8 x 5½.

Not a history so much as a book of personal reminiscences. The author, an officer in the United States army, spent several years in field duty in the Platte Valley. Besides keeping a journal he wrote many home letters which were afterwards found to be preserved and from these two sources the book has mainly been compiled. The first-hand impressions are interesting reading and will become valuable aid in writing the history of the development of these regions.

F. V. EMERSON.

The Colonising Activities of the English Puritans. The Last Phase of the Elizabethan Struggle with Spain. By A. P. Newton. With an introduction by C. M. Andrews. x and 344 pp. Map, index. Yale University Press, New Haven, 1914. 9 x 6.

This volume is a careful study of the two thick folio volumes, containing the "Journal of the Governor and Company of the Adventurers for the Plantation of the Island of Providence" and the "Book of Entries" of the same, found in the English Public Record Office. The island of Providence, or Santa Catalina, about six by four miles in extent, lies off the coast of Nicaragua, in about 13°20′ N. and 81°20′ W. The association was a joint stock company chartered by Charles I. The "Adventurers" or stockholders were the foremost Puritan leaders of the nobility and gentry, who opposed Charles I. The "Journal" and "Entries" cover a period of eleven years, during which Charles ruled without Parliament. The records throw considerable light on the inside history of the Massachusetts Bay Colony and the Saybrook Project. The motives of the speculators were a curious mixture of Puritan zeal, commercial activity, and desire to break the world power of Spain. All of these aims came

XUM

to grief. The Puritan colony became a refuge for buccaneers; the company suffered financial loss, the Spanish world power remained unbroken. The trend of historical opinion will doubtless agree with the writer's view, that the Puritan temper inclined to a pronounced meddling of ecclesiastics in civil government, but will probably include this in the larger induction that such meddling in state affairs is inherent in every ascendant and dominant religious society. It is curious that Robert Rich not only obtained its charter for what was afterwards the abolition state of Massachusetts, but also brought about the first selling of negro slaves in Virginia. DAVID H. BUEL.

Logging. The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant. xviii and 590 pp. Ills., index. John Wiley & Sons, New York, 1913. $4.50. 9½ x 6.

Students in forestry schools will find this text to be the most complete of its kind yet published. The book will be helpful also to persons interested in the utilization of the forest, and as a reference work for technical high schools and academies.

The text includes brief discussions of forest resources of the United States, forest protection, labor, camps, and tools. It very naturally emphasizes the processes employed in logging in the different forest regions of the United States. Transportation by means of animals, railroads and water is covered with considerable detail. There are two short chapters on turpentine orcharding and harvesting tan-bark. The appendix includes a well-selected bibliography, definitions of terms used in logging, and several log grading rules.

The book is well written and fully illustrated. It is opportune, for there is now a definite demand for texts which tell the story of processes in production. Professor Bryant has done for forest production what should be accomplished in other lines, as, for example, in the different fields of agriculture.

G. E. CONDRA.

The American Japanese Problem. A Study of the Racial Relations of the East and the West. By Sidney L. Gulick. 349 pp. Ills., index. Charles Scribner's Sons, New York, 1914. $1.75. 8 x 5½.

A broad-minded treatment of the ethnological, sociological and political questions arising from the contact of the United States with Japan. Based upon personal experience and investigation, it lays bare the mutual illusions of the White Man and the Yellow Man with regard to each other. The Yellow Peril and the White Peril are subjected to a searching analysis and shown to be equally baseless. It is claimed that experience shows that the Japanese in this country are thoroughly assimilated to our civilization, and that biological considerations tend to show that amalgamation through intermarriage is entirely practicable. But it is not advocated, it is strongly discouraged. The Hobson theory of the feasibility of a Japanese military occupation of this country is considered impossible. A foreign policy for this country is urged which shall show no discrimination against any nation of the Orient and yet practically provide against an industrial invasion of this country from the Far East. The prominent feature of such a policy is an immigration law restricting the immigration from any country to a percentage per annum of the people of that country (including their children who are already naturalized citizens of this country). An urgent plea is made for a policy of sympathy for all nations, of redress of past injustice done them, and of practical help for those who most need it. DAVID H. BUEL.

Mountaineering and Exploration in the Selkirks. A Record of Pioneer Work among the Canadian Alps, 1908-1912. By Howard Palmer. xxvii and 439 pp. Maps, ills., index. G. P. Putnam's Sons, New York, 1914. $5. 9½ x 6½.

A book remarkable for its combination of mountaineering, enthusiasm and scientific spirit.

Before Mr. Palmer's series of remarkable excursions into the Mt. Purity District south of Glacier House, "the red letter day in the annals of Selkirk mountaineering," as he so aptly puts it, was in 1890. The eighteen intervening

years are an eloquent witness of the difficulties of the region: a luxuriant vegetation in the lower valleys, lack of trails and low passes, inability to use animals for transport and lack of human porterage,—all of which turned the tide of sport and exploration to the higher peaks and open, lake-studded valleys of the Canadian Rockies with their Indian trails and possible animal transport. A reader acquainted with the Selkirks marvels at Mr. Palmer's accomplishments upon a commissariat limited to the backs of himself and his companions.

The first portion of the book deals with the region of Rogers Pass and south of it for twenty miles. It is a "continuous performance" over ice and rock with vegetation only in the depths of the Geikie and Battle Creek valleys. In this district Mr. Palmer not only accomplished everything that his predecessors did, both in mountain climbing and geographical exploration, but he penetrated to the hitherto unvisited foot of the Battle Creek Range and the summit of Grand Mountain, leaving no high virgin peak behind.

The second portion of the book, comprising about two-thirds of the whole, deals with the exploration and mapping of the hitherto practically unknown districts north of Rogers Pass within the Great Bend of the Columbia River. Here Mt. Sir Sanford, the highest peak in the Selkirks (11,596 feet), is the point of attack, and the immediate region surrounding it is most thoroughly described. The six attempts to reach its summit rival in exciting interest Whymper's similar attempts on the Matterhorn, fortunately with equal success and without his tragedy.

Geographically Mr. Palmer has here shown to the world an absolutely unknown region and, the physical difficulties of the situation considered, has placed himself among the explorers of first rank, while the numerous appendices, among them his topographical surveys, observations of glacial movements, and meteorological records, show how much excellent work can be done by a careful and conscientious unprofessional observer and recorder.

The work is so profusely illustrated that it is possible for an interested reader—even one unacquainted with the region—by a constant comparison of text, map and illustrations to follow the expedition visually. As a guide book to the Selkirk region it cannot be surpassed. As a complete history of exploration in that region it leaves nothing to be desired. C. S. THOMPSON.

Recollections of Sixty Years. By the Rt. Hon. Sir Charles Tupper. vii and 414 pp. Ills., index. Cassell & Co., London. Funk & Wagnalls Co., New York. 16s. 8½ x 6½.

It is unusual that a man in his 92nd year should be able to write his recollections of a long public life. A medical man, Sir Charles Tupper, after twelve years of professional practice, graduated into the larger sphere of public life. These "Recollections" begin with his address at the Mechanic's Institute of St. John, N. B., "On the Political Condition of North America," in 1860, and close with a selection of letters of congratulation written to him on his taking up the premiership of Canada in 1896. This story of his public life is inseparably bound up with the political, industrial, and educational development of Canada during this period. It records the struggle for religious equality before the law, for the confederation of the Maritime Provinces, of the whole of Canada, of the entire British Empire. His memories of the rising of Louis Riel, of the founding and upbuilding of the Canadian Pacific Railroad, and of the Fisheries Question between this country and Canada are worthy of note. Throughout is discernible the breadth of view of a public man of the widest experience. The work abounds in letters of men of note concerning public affairs affecting Canada and this country, and so will be valuable to the historian of this period. DAVID H. BUEL.

SOUTH AMERICA

Geschichte Südamerikas. Von Hermann Lufft. Sammlung Göschen. I: Das spanische Südamerika (Chile, Argentinien und die kleineren Staaten). 136 pp. Index. II: Das portugiesische Südamerika (Brasilien). 140 pp. Index. G. J. Göschen, Berlin & Leipzig, 1913. 90 pfg. each. 6½ x 4½.

A very brilliant picture of South America past and present. There is a

rough outline of the physical environment—the aim is not very high here—an admirable account of European and Spanish conditions at the time of the Conquest, an attempt at the inner meaning of the Renaissance for the Spaniards and the state of mind of Conquistadores and conquered alike. The little pen pictures of Bolivar, San Martin and Rosas are gems. The whole of the second volume is devoted to Brazil, and its economic present and future is gone into in detail. The promise of Brazil's future and the author's interest in the German colonies of the southern states seem to explain the rather disproportionate treatment of this country. The variety and contrast of Brazil's races are put in sharp relief. The country is advised to cultivate the integrity of each race. The Germans are urged, without resisting in any way the official use of Portuguese, to preserve German speech and culture, to be patriotic Brazilians and to take part in public affairs. The Argentine is less fully treated. Wheat culture is still "Raubkultur" and still occupies but a fifth of the available space. Chile has little land for colonizing. MARK JEFFERSON.

Illustrated South America. A Chicago Publisher's Travels and Investigations in the Republics of South America, with 500 Photographs of People and Scenes from the Isthmus of Panama to the Straits of Magellan. By W. D. Boyce. 638 pp. Maps. Rand, McNally & Co., Chicago & New York, 1912. $2.50. 9 x 6.

Admirably illustrated. About the best 500 South American photographs that the reviewer knows of in one book, including many interior regions of which pictures are scarce. Mr. Boyce figures at times in the pictures. He is not shy, but a newspaper man, who writes easily and tells very plainly what was told him. Some of the presidents of republics told him things, for he tells us of all the notables that he got in touch with. He traveled in generous style. Although he does not realize that books exist that tell a good deal of what was new to him, he has put a great deal of interesting new matter in his book. His idea of investigation is that of a hustling newspaper man to get some report *now*. He visited all South America in one year. He had no training in languages nor in real study. One is not surprised that he finds that the Andes send the water from their snows to the Pacific by underground rivers, which will be some day tapped in the desert coast regions of Peru by wells! Also that 13/16ths of Lake Superior's waters are similarly derived from underground rivers! The book has much useful material for the geographer.
MARK JEFFERSON.

AFRICA

Egypt in Transition. By Sidney Low. With an introduction by the Earl of Cromer. xxiv and 316 pp. Index. The Macmillan Co., New York, 1914. $2.50. 8½ x 6½.

The Earl of Cromer, who, for a quarter of a century, was the virtual ruler of Egypt, in his introduction to this book says that the author "has produced a lively and, as far as I can judge, a very trustworthy account of the present condition of affairs in the valley of the Nile. I have no hesitation in commending what he has written to the favorable consideration of all who are interested in the subject." The book contains a good account of life and conditions in the Nile delta, a part of Egypt that receives scant attention in most books on that country.

My Somali Book. A Record of Two Shooting Trips. By Capt. A. H. E. Mosse. xxv and 314 pp. Ills., index. Sampson Low, Marston & Co., Ltd., London, 1913. 12s. 6d. 9½ x 6.

A good hunting book by one who began his experience as a lion hunter by killing five lions in two days. He gives much information, very valuable from the sportsman's point of view, as to the capabilities of various types of modern weapons, the kinds of game in Somaliland, their habits and characteristics, how to track and kill them, protective coloration, and the outfit and cost of hunting expeditions. The work will interest the brotherhood of big game hunters. Its

author has had large experience in Asia and excellent success in a bit of Africa. British Somaliland is a good game country but is likely to be closed to hunters for some years to come. The British Government has now withdrawn all its posts in the interior. As it occupies only the coast, the happy hunting grounds are not regarded as safe just now with the Mad Mullah and other impediments still in the way.

Planting in Uganda. Coffee, Para Rubber, Cocoa. By E. Brown and H. H. Hunter. With contributions by Prof. Dunstan and G. Massee. xvi and 176 pp. Ills., index. Educational Co. of Ireland, Dublin, 1913. 9 x 6.

Uganda is one of the most promising African colonies of Great Britain. The possibilities of agricultural development foretold by Sir Harry Johnston are being realized. Plantation industries are favored by good soils and altitudes of 3,000 feet or more. Uganda cotton has already taken its place among the standard cottons of British commerce and the exports amount to over $1,000,000 a year. Para rubber in some districts has been an unqualified success. Coffee has also been regarded as having bright prospects, but a fungoid disease that has just appeared may impair its future. Uganda bids fair to become one of the chief cocoa-producing countries. Such facts add importance to this careful work, the result of ten years' experience, devoted to every practical question relating to the choice of land for plantations, plantation development, transportation facilities, etc.

Through the Heart of Africa. Being an account of a journey on bicycles and on foot from Northern Rhodesia, past the Great Lakes to Egypt, undertaken when proceeding home on leave in 1910. By F. H. Melland and E. H. Cholmeley. xvii and 305 pp. Map, ills. Constable & Co., London, 1912. 12s. 6d. 9 x 6½.

The authors are young Englishmen of education and good position in the administrative service of Northern Rhodesia. Their experience in this newly developing region of Central South Africa qualified them to observe accurately and write in an edifying manner of what they saw in German East Africa, British East Africa, Uganda, and the upper Nile, as they made the long inland journey to the Mediterranean. They report tropical Africa as developing with wonderful rapidity and have great confidence in the future of the continent. Their book is to be commended as very readable and unusually informing.

ASIA

Overland to India. By Sven Hedin. Vol. I, xix and 416 pp. Maps, ills. Vol. II, xiv and 357 pp. Index. Maps, ills. Macmillan & Co., Ltd. London. 1910. $7.50. 2 vols. 9 x 6 each.

Zu Land Nach Indien durch Persien, Seïstan, Belutchistan. Von Sven Hedin. Vol. I, xi and 407 pp. Map, ills. Vol. II, viii and 394 pp. Map, ills., index. F. A. Brockhaus, Leipzig. 1910. 9 x 6 each.

There is a certain quality about the style of this record of days far afield which makes easy reading. These two volumes are but the expansion of day by day entries in diaries. Yet the author's art has sufficed to conceal the dull diary routine, the calendar has been skillfully disguised, and we are led rapidly through the routine of desert days from camp to camp with no loss of the vivid quality of reconnaissance record. All the distances are reckoned in farsakhs, the once familiar parasang of the Anabasis record. The country is much the same, for in the earlier stages, Dr. Sven Hedin certainly crossed the line of Xenophon's retreat from the field of Arbela.

Nor is the Athenian mercenary the only predecessor in this dry waste. Alexander twice forced his army through these deserts. Marco Polo found in these hardships his way to China. Hedin in this traverse has studied carefully the courses of these predecessors and has much entertaining discussion of their several routes. With him the trip was but the preface to the exploration of

XUM

Tibet by way of Kashmir. He chose this way of reaching India in order that he might give particular attention to the desert physics in so far as they may shed light on the problem of desiccation which has so greatly engaged the attention of the geographers of inner Asia.

After a false start at Batum he began his journey at Trebizond. From that ancient stronghold as far as Teheran he was restricted to well-known highways. Thenceforth he was able to pick routes where no European had gone before; thus, to his particular research he was able to add a new route which will tend to open up more of the wastes of Persia and Baluchistan to the record of our maps. His route led him by way of the great Kevir through Kuhistan and Seistan and through the land of the Baluchi to the Indian rail head at Nushki.

Soon after leaving Teheran he entered the great Kevir (salt waste) and followed its southern and western edge for many marches. Twice he crossed the Kevir solely in zeal of exploration, for the traverse was uncomfortable and might at any moment have become perilous if the rain, which was not withheld, had lasted for the brief space which would have turned its mud flats and salt flats into quaking bog. No such extensive study has ever been made of this formation so characteristic of eastern Persia and so important in the study of desiccation phenomena. The tracing of contours of equal altitude shows that these present salt bogs occupy the sites of lake beds. The same is observed to be true of the similar beds of playa in the plateau of Nevada, disjoined fragments of the Bonneville formation. Beyond this initial fact there is great uncertainty. Hedin shows that much of the kevir appearance is best explained on the theory that it is a mass yet plastic. In an epoch of higher precipitation (and he cannot find that such was the case much later than the ice age) these kevirs were lakes, commonly without exit or soon sinking below the level at which outflow is possible, therefore becoming eventually salt lakes. They have been acted upon by steady evaporation tending to reduce their water level from above and by æolian portage of dust equally tending to reduce the water space from below by the sinking of the particles. On the other hand, they have had accretion from torrents in time of rain and these torrents have brought down great freight of denudation material from the bare ravines through which they course. These changes are so slow as to be secular. There is no evidence that, in any historical period, have the kevirs been other than they now are.

WILLIAM CHURCHILL.

Gaza: A City of Many Battles (From the family of Noah to the present day). By T. E. Dowling. 120 pp. Ills., index. Soc. for Promoting Christian Knowledge, London, 1913. 2s. 7½ x 5.

An outline history of this famous place in Palestine to which many references are made in the Old Testament, though the New Testament has only one reference to it. The literary sources down to the present time are also quoted; and more extended description of the town of to-day is given in the concluding forty pages.

America and the Philippines. By Carl Crow. xi and 287 pp. Ills. Doubleday, Page & Co., New York, 1914. $2. 8½ x 5½.

A competent and informing book on these islands, our relations to them, what we have been trying to do for the people and what we have really accomplished. In the author's opinion, if America should withdraw from the islands, ten years would wipe out all trace of her occupancy other than the buildings erected.

The Philippine Problem, 1898–1913. By Frederick Chamberlain. 240 pp. Ills. Little, Brown & Co., Boston, 1913. $1.50. 7½ x 5.

The author is thoroughly in sympathy with the former Philippine policy of our government, which, in 1898-1913, wrought so many changes among the islands and so vastly improved conditions in respect of government, health, education, public improvements, etc. It is one of the best small books that have been

written on the Philippines and all who read it will know what our government has tried to accomplish, what has really been attained, and what appears to the author to be the present needs of the situation.

AUSTRALASIA AND POLYNESIA

The Climate and Weather of Australia. By H. A. Hunt, G. Taylor and E. T. Quayle. 93 pp. Maps, index. Commonwealth Bur. of Meteorol., Melbourne, 1913. 9½ x 6½.

Australia is climatically one of the most interesting land areas of the world, on account of its compactness, its position in relation to the different wind belts, the contrasts between its interior and coasts, and the excellence of the meteorological work which is being done there. This new volume, the first "in the nature of a text-book which has been published on Australian Meteorology," is one of the most satisfactory discussions on climate and weather which we have seen for any region. It is not only remarkably complete, but it is interesting. A great deal of emphasis is rightly laid upon the weather element, and that, when adequately carried out, ensures the success of a climatological discussion. Not only are the mean climate conditions carefully charted and explained, but the characteristic weather conditions which make up the climate are clearly and fully presented. One-third of the figures are devoted to weather types—none too large a proportion if a valid and accurate picture of the climate is to be given.

We note with satisfaction the admirably clear, colored maps showing the regions of maximum monthly rainfall; the relation of contour to rainfall; the climatological regions with type stations—an excellent idea which might well be followed in all discussions of the climates of any considerable area,—and the weather type maps just referred to.

Would that we had many similarly clear-cut, systematic, complete and interesting discussions of the climates of other regions. If we had, climatology would receive more attention on the part of many who now, we fear, turn away discouraged from the massive and "dry" volumes of carefully tabulated and summarized climatic data which, somehow or other, fail to give the seeker for a vivid climatic picture what he really wants. R. DEC. WARD.

The Coming Hawaii. By J. K. Goodrich. The World To-Day Series. x and 329 pp. Ills., index. A. C. McClurg & Co., Chicago, 1914. $1.50. 7½ x 5.

Professor Goodrich's book is wholly commendable as containing so much of the story of the past and present of Hawaii as to give its readers all that is really necessary for intelligent apprehension of the archipelago, its history, people, resources, progress and prospects. Its concluding chapter, only eight pages of text, gives the book its title, but the preceding chapters lead naturally to the deductions as to the prospects ahead. The author says that very much of what the coming Hawaii is to be depends upon success in agricultural development, that agriculture is capable of large expansion and that the population should be increased by immigrants of the farming and stock-raising classes from the United States. No pecuniary aid is given to intending immigrants, but the government is encouraging them in all other ways, and two communities of white settlers, partly from the United States, have already been formed. There are several hundred thousand acres of good land now open to settlement. The author regards the future of the territory as bright with promise. A bibliography of 124 titles is included.

Die Deutschen Marianen, Ihre Natur und Geschichte. Von S. von Prowazek. iv and 125 pp. Ills. J. A. Barth, Leipzig, 1913. Mk. 4. 9 x 6.

Within the most modest pamphlet semblance this little volume affords a most valuable supplement to Safford's two works upon our American possession in the Mariannes, the island of Guam. Although the fifteen islands of

the archipelago lie in close succession they fall into four groups: Urakas, Maug, Assongsong, and a channel; Agrigan, Pagan, Alamagan, Guguan, Sarigan, Anatahan, and a channel; Saipan, Tinian, and a channel; Rota and Guam or Guahan. The three channels are not great waterways, yet they have served to establish distinct zoogeographic and phytogeographic provinces which render such a book as Safford's "Useful Plants of Guam" not quite applicable, sometimes containing too much for the northern groups, at others falling short. This little monograph corrects Safford in each particular and should serve as a supplement to his work. A chapter on the form of the land masses of these islands, the formative elements at present active upon them, particularly the discussion of the Marianne extrusion in relation to the continental mass of Asia will prove peculiarly attractive to physical geographers, and all the more since the geognostic problems of the mid-Pacific are yet far from satisfactory settlement.

EUROPE

Days in Attica. By Mrs. R. C. Bosanquet. xiv and 348 pp. Plans, ills., index. The Macmillan Co., New York, 1914. $2. 9 x 6.

The book will be interesting to the student fond of his Greek classics and the legends and myths which they enshrine. He will find his Homer, his Æschylus, his Aristophanes, his Thucydides, his Herodotus and his Plutarch quoted in good English where they treat myth, or mystic rite, or temple, or landscape. In the running account of Attic history, ancient, mediæval and modern, a woman's eye is discernible, with keen observance of detail, and a nice discrimination of the peculiarities of woman's costume, as found on statuette, or vase or urn. There are appreciative descriptions of the different museums of Athens, and their classical antiquities, of the architectural remains of the ancient city, and those of the subsequent Roman occupation, as well as of the Byzantine churches, and the Crusaders' and the Turkish structures. The chapter on the home life of Attica gives an entertaining account of family life in town and country, the relations of husband and wife in the Greek household, their marriage customs, and their manner of caring for their children. The description of a European housekeeper's experience with Greek servants, cooks, butlers, gardeners, housemaids, and horsemen is amusing. The Greek returned from the United States is met here and there and duly appreciated. The book closes with an account of trips to the environs of Athens and a day's tour to Corinth and Chalcis. DAVID H. BUEL.

Camping in Crete. With notes upon the animal and plant life of the island. By Aubyn Trevor-Battye. Including a description of certain caves and their ancient deposits. By D. M. A. Bate. xxi and 308 pp. Map, ills., index. Witherby & Co., London, 1913. 10s. 6d. 9 x 6.

A series of tours about the island of Crete with the camp as a convenience in lieu of hotels. This island is well covered in the itinerary and a picture of the physiography and the people becomes thereby a fairly complete one. Canea, Candia and Sitia situated along the north shore, Mount Ida and the Nidha Plain in the interior and a few contacts with the southern shores are the landmarks of the route. The main part of the book is pleasant reading and will yield an intimate acquaintance with many details of Cretan physical geography, people and customs. The notes at the end of the book contain the more scientific account and here may be found very good accounts of the caves of the island, the flora, fauna, physical features, industries and people. Pictures and a good map aid the author in his story. ROBERT M. BROWN.

Wandlungen der deutschen Volkswirtschaft im neunzehnten Jahrhundert. Von W. Wygodzinski. 201 pp. M. Du Mont-Schauberg, Köln, 1912. Mk. 1.80. 8 x 6.

The book contains a course of lectures given by the author at the University of Bonn but intended for a wider circle of readers. Its object is to

show the inner connection between the economic changes which Germany has undergone during the last century, and which cannot be fully understood or appreciated unless studied as a part of the whole life of the nation. From this point of view the author discusses the changes from the old ideals to the new, the making of a living about 1800, the free and unrestricted competition of all about 1900. The effects of this change are seen in the development of capitalism, of technique, of traffic; the rise of the great industries and its baneful effect on the old free trades; the development of new commercial and financial methods; the growth of the large cities, and the fundamental changes in the working conditions of the country population, etc. While presenting an enormous subject, as it were, in nutshell, the book is nowhere shallow or superficial, and will be much appreciated by all who are looking for a brief introduction into the economic conditions of modern Germany.

M. K. GENTHE.

WORLD AND PARTS OF IT

Das Mittelmeergebiet: Seine Geographische und Kulturelle Eigenart. Von A. Philippson. 3. Auflage. 256 pp. Maps, ills., index. B. G. Teubner, Leipzig, 1914.

The first edition was reviewed in the *Bulletin* (Vol. 36, 1904, p. 779). This edition is brought up to date as to geology, climatology, statistics, maps, etc.

Das Russische Reich in Europa und Asien. Ein Handbuch über seine wirtschaftlichen Verhältnisse. Herausgegeben von Dr. A. von Boustedt und Davis Trietsch. 2. ergänzte Auflage. 508 pp. Verlag für Börsen & Finanzliteratur, Berlin, 1913. Mk. 8. 9 x 8.

The volume is an example of German alertness to commercial opportunities. It contains statistics and other information in variety on the needs and conditions of Russian trade. In considerable part its material has geographical value. Numerous topical articles take up the production of raw materials and the movement of trade, with abundant mention of definite districts and localities. Sixty-four pages are devoted to the resources of Asiatic Russia and their development. A gazetteer furnishes terse information about the cities of commercial importance. This book makes available a good deal of not easily accessible information of an economic character, and so forms a valuable supplement to previous handbooks of the Russian Empire. CARL O. SAUER.

MATHEMATICAL GEOGRAPHY AND CARTOGRAPHY

Les cartes géographiques et leurs projections usuelles. Par L. Defossez. 116 pp. Ills. Gauthier-Villars, Paris, 1910. Fr. 2.75. 7½ x 5.

In this little book, one of the "Actualités Scientifiques" series, the author has selected the most usual methods of map projection and has given a simple explanation of each method. The higher mathematics are studiously avoided, but it has not been possible to avoid some rather formidable looking trigonometric equations.

The book contains an introduction and four chapters. In the introduction, various terms to be employed are defined, and mathematical relations are established. Numerical examples of the solutions of the equations of the great circle and of the loxodrome are given. Chapters I, II and III are devoted to explanations of the various forms of azimuthal, conic, and cylindrical projections, respectively. In each chapter, the theory of the projection is first given, then examples of its various modifications, and finally a comparison of these various forms. Chapter IV is devoted to several projections which are employed when the entire sphere is to be shown. JAMES GORDON STEESE,

Captain, Corps of Engineers, U. S. A.

XUM

Theorie der Erdgestalt nach Gesetzen der Hydrostatik von Clairaut. Herausgegeben von P. E. B. Jourdain und A. von Oettingen. Ostwald's Klassiker, Nr. 189. 162 pp. Diagrams. W. Engelmann, Leipzig, 1913. Mk. 4.60. 7½ x 5.

A. C. Clairaut (Clairault) was born at Paris in 1713, the son of a teacher of mathematics. At the age of thirteen he read before the Academy of Paris a paper on four newly discovered curves, and at sixteen completed "Researches on Curves with Double Curvature." After taking part in the expedition to Lapland for the measurement of the meridian he published in 1743 his "Theory of the Shape of the Earth according to the laws of Hydrostatics," which was the most important step forward in the study of the shape of the earth since the work of Newton, Huyghens, and Bouguer. Laplace called it "one of the most beautiful mathematical productions," and Todhunter has said of it: "In the figure of the earth no other person has accomplished so much as Clairaut; and the subject remains at present substantially as he left it, though the form is different. The splendid analysis which Laplace supplied adorned, but did not really alter, the theory which started from the creative hands of Clairaut." The work has therefore been rightly included in Ostwald's editions of "classical works of the exact sciences." The volume contains a translation of the original treatise, a short biography of the author, his portrait, and an appendix of notes and works of reference.

M. K. GENTHE.

PHYSICAL GEOGRAPHY

Coast Erosion and Protection. By Ernest R. Matthews. xiv and 147 pp. Maps, ills., index. Charles Griffin & Co., London, 1913. $3.50. 9½ x 6½.

Although this volume is designed primarily for use by engineers having to deal with harbor and coast protection, it contains some things of value to those interested in the physical geography of the shoreline. Among the abundant illustrations are some of the most remarkable pictures of breaking waves which have ever come to the reviewer's notice. The various types of sea defenses are well shown by good diagrams and photographs. A brief and rather superficial discussion of "wave-action," accompanied by diagrams incorrectly representing the water as moving forward in the wave troughs, is followed by two chapters summarizing the extent of erosion and accretion at different points on the English coast. It appears that a retreat of the shoreline under wave attack amounting to an average of fifteen feet or more per year is not uncommon, while other points advance into the sea almost as rapidly. The author properly concludes that the loss of land exceeds the gain, since part of the wave-eroded material must be carried out into deep water; but if he means that the *area* lost exceeds the area gained, his conclusion is not justified by his arguments; for the area might increase while the bulk of land decreased. Attention is called to the rather inconsistent attitude of the British Government, which, according to the author, contributes nothing to the cost of coast protection, but promptly seizes any new land formed from the eroded materials.

D. W. JOHNSON.

Mountains: Their Origin, Growth and Decay. By J. Geikie. xix and 311 pp. Ills., index. D. Van Nostrand Co., New York, 1914. $4. 9 x 6.

In a medium-sized volume, the veteran author has achieved a critical summary of the present status of orogenic knowledge. He has expressed its aim as to be "helpful to readers not especially versed in Geology, who desire a fuller knowledge than is usually presented in geographical textbooks."

The description of the simple mountains of accumulation is followed by a treatment of the more complex structures of deformation. Here the Alps serve as the principal, because the best studied, type. An excellent résumé is given of their geological structure and of the various theories that have been held with regard to their origin, culminating in the idea of overthrusts and of overfolds as their leading causes. The closing chapters are concerned with oceanic

margins as zones of instability, and with the carving of subsequent mountains from plateaus of accumulation and of erosion.

From a strictly geographical view-point, the book carries a good deal of geological ballast. This, however, the author explains by the statement of his own conception of the topic as a "borderland between Geology and Geography." In the choice of types a high degree of impartiality is shown between the Old and the New Worlds. In the clearness of its plan, in the careful analysis of many opinions, and in the adequacy of its language this latest volume is a worthy addition to the works of James Geikie. Mention should also be made of the splendidly selected illustrations, reproduced by half-tones of remarkable brilliancy. CARL O. SAUER.

Engineering Geology. By Heinrich Ries and Thomas L. Watson. xxvi and 672 pp. Ills., index. J. Wiley & Sons, New York, 1914. $4. 9½ x 6.

A thorough, practical, geological training should be included in the education of a civil engineer, and to meet that need, this book was written. Due to the fact that the non-metallic minerals play a major part in the problems encountered by a civil engineer, the authors have dealt primarily with the non-metals, only one chapter being devoted to ore deposits. Among the subjects considered are: rock-forming minerals; rocks, their origin, composition and use as building stone and road material; structural geological features, and their relation to tunneling operations, dam and reservoir foundations, landslides; rock-weathering and soils, with the effect of soils on sewage disposal; surface river waters, and erosion; geological factors effecting and controlling underground water supplies; a detail study of landslides; wave action and shore currents, their relation to coasts and harbors; lakes; glacial deposits; building stone, cement, clays; coal; petroleum, natural gas; road materials; ore deposits. The various geological principles set forth are made clear by citing actual cases, which show the application of the principles. Added to the written explanations are photographs, maps, diagrams and sections with which the book is illustrated profusely. The book is both interesting and of practical value. It should prove of worth not only to students of engineering, but also to experienced engineers. WILBUR GREELEY BURROUGHS.

Lehrbuch der Geologie. Von Emanuel Kayser. 2. Teil: Geologische Formationskunde. 5th edit. 852 pp. Ills., index. F. Enke, Stuttgart, 1913. Mk. 22. 10 x 6½.

The fourth edition of Dr. Kayser's admirable Lehrbuch was reviewed in the *Bulletin* (Vol. 45, 1913, p. 64). In the fifth edition Vol. 2 has been enlarged from 798 to 852 pages. Since the first edition was issued the author's intention to keep his book up to date has been noteworthy in every reissue of the work. One of the distinctive features of the Lehrbuch is the number of illustrations, which has again been enlarged in the present edition.

OCEANOGRAPHY

The Ocean. A General Account of the Science of the Sea. By Sir John Murray. Home Univ. Library. 256 pp. Maps, index. Henry Holt & Co., New York. 50 cents.

The late Sir John Murray's authority in oceanography is so great that a reviewer comes near presumption who tells readers that this is an admirable primer. No copyright notice and no date, but the work was written since the *Titanic* disaster, for we are told that she doubtless lies on the bottom intact, except for the implosion of bottles and other enclosed spaces. It is popularly written and interesting. Many new results are given and so well stated that no geographer can well afford to be without the book. Special interest attaches to the geosphere chapter, and its brief statement of Murray's "tektosphere." Oceanography does not tolerate continental bridges like Gondwanaland. Rarely, a modern note appears rather to tantalize than help; as *path heat*, *spin heat*, and *wobble heat*, p. 65, "Murray and Irvine's well-known experiments," p. 220! Surely not to general readers.

XUM

The maps are crude, behind the times. One would say they had not Sir John Murray's supervision. That of ocean depths is inexpressive and inaccurate. The temperature and density charts are highly and unnecessarily generalized, which is a pity in a book of such rare value. Its small scale is no reason for putting the equatorial Romanche Deep a degree too far west, nor the Porto Rico Deep 200 miles too far north. The West African Basin is not brought out even so far as an accurate drawing of the 2000 fathom line would allow, with a better expression of the Walfish Ridge of Supan, which is here hardly hinted at. The text, too, has no word of the contrast of bottom temperature in the East and West Atlantic Basins that result from this ridge.

MARK JEFFERSON.

Der Ozean. Eine Einführung in die allgemeine Meereskunde. Von O. Krümmel. 2nd ed. viii and 285 pp. Maps, ills., index. G. Freytag, Leipzig, 1902. 7½ x 5½.

"Der Ozean" is the great oceanographer's contribution to the series of concise compendiums entitled "Das Wissen der Gegenwart." It is compact in plan and includes as its major topics the distribution and articulation of the oceans, the nature of the sea-floor, the composition and temperatures of the sea-water, and the forms of water in motion. In the earlier chapters much space is devoted to the methods employed by the oceanographer in his research. The final chapter is a masterly treatment of waves, tides, and currents. The little volume is packed full of examples drawn from a great range of sources. Krümmel seems to be able to quote any reference from the Odyssey down to date. It is to be regretted that the publishers have economized on the cuts, which are decidedly ill assorted. CARL O. SAUER.

METEOROLOGY AND CLIMATOLOGY

The Atmosphere. By A. J. Berry. Cambridge Manuals of Science and Literature. 146 pp. Ills., index. University Press, Cambridge; G. P. Putnam's Sons, New York, 1913. 40 cents. 6½ x 5.

The title of this book is somewhat misleading. "The Gases of the Atmosphere" would seem to be better. Beginning with a brief history of the first experiments, the author traces the rise and fall of the principal theories concerning the atmosphere. This is followed by a short discussion of the principal constituents on the basis of our modern knowledge. The last half of the book is devoted to the following topics:

The escape of gases from planetary atmospheres according to the kinetic theory: liquid air; the inert gases in the atmosphere; the radioactivity of the atmosphere; the probable composition of the atmosphere in early geological time.

At times explanations are very simple and lucid and at times they lose themselves in chemical formulæ or mathematical physics. In general the treatise is interesting. Perhaps its chief value lies in the descriptions of the principal experiments that have been employed for years past to determine the nature of the atmosphere and its composition. EUGENE VAN CLEEF.

The Place of Climatology in Medicine. Being the Samuel Hyde Memorial Lectures read before the Section of Balneology and Climatology of the Royal Society of Medicine, May 20 and 21, 1913. By William Gordon. 62 pp. H. K. Lewis, London, 1913. 9 x 5½.

The Influence of Strong, Prevalent, Rain-Bearing Winds on the Prevalence of Phthisis. By William Gordon. 108 pp. Maps, index. H. K. Lewis, London, 1910. 9 x 6.

Dr. Gordon makes a strong plea for the recognition of climatology in the medical curriculum in his "Samuel Hyde Memorial Lectures," which were delivered before the Section of Balneology and Climatology of the Royal Society of Medicine in May, 1913. He points out the seriousness of the present neglect

of this branch of teaching, and emphasizes the importance of what he calls "a new principle in climatological investigation, *viz.*, the principle of approximate isolation of influences." The recognition of the importance of this "new principle" as a working basis is certainly not new, but its application in climatological research has not, as Dr. Gordon observes, been given adequate attention. A further point upon which our author lays emphasis is his view that there is no valid evidence that altitude *per se* affects the prevalence of phthisis.

Dr. Gordon's own opinion in regard to phthisis is that the prevalence of that disease is influenced by strong prevalent rain-bearing winds. This thesis he has set forth, with great care, in his second volume (published in 1910), in which he presents the evidence collected during ten years. It must suffice here to say that he has brought together a large amount of statistical evidence in support of his view which, if accepted to any degree, will mean, as he says, that "much of the climatology of phthisis will have to be reconstructed."

R. DEC. WARD.

Our Own Weather. A Simple Account of Its Curious Forms, Its Wide Travels and Its Notable Effects. By Edwin C. Martin. 281 pp. Ills., index. Harper & Brothers, New York & London, 1913. $1.25. 7½ x 5.

"The weather itself is but an activity. The air of the atmosphere, like the water of the sea, and, indeed, like all nature, including man, is forever seeking ease and never quite finding it. The weather is simply the air's business." Thus does the author of this pleasing volume open his first chapter. He obviously writes because of pure love of the subject. In an easy, colloquial, vivid, personal way the ordinary facts of our weather controls and weather types are described, and in a broad, general way they are also explained. There is nothing of the text-book here. It is all free and easy and unconstrained. It is refreshingly different. One may readily pardon the occasional inaccuracies in view of the merits of the book, which is so well up to date that it includes an account of the tornadoes and floods of March, 1913. We think that the effort to make the descriptions vivid and catchy is frequently overdone. For example, on page 62 we read: "Usually in the formation of a trough a center of low pressure up about the Great Lakes has entered into a kind of trust with one down in the neighborhood of the Gulf, and the combination holds ground in a rather dull, obstructive way, northeast and southwest, over the lower Mississippi and Ohio valleys, a business without, for the moment, any real head." Nor do we like "the body that scatters the air around and makes fair weather" (title to chapter VII). Yet we have no hesitation in saying that Mr. Martin's book may well be read by those who wish to become acquainted with the facts of "our own weather," and with their explanations. The cloud views are reproduced, in half-tones, from the colored Hydrographic Office cloud types, without, so far as we have discovered, any indication of the source from which they were taken. The colored views are so much better than Mr. Martin's and are so readily obtainable that some reference to them should have been made. But the author has strictly avoided references, so he is, at any rate, consistent.

R. DEC. WARD.

ANTHROPOGEOGRAPHY

Das Meer als Quelle der Völkergrösse. Eine politisch-geographische Studie. Von F. Ratzel. 2. verbesserte Auflage besorgt von H. Helmolt. iv and 91 pp. R. Oldenbourg, München, 1911. Mk. 1.80. 9 x 6.

This is the second edition of Ratzel's endorsement of strong naval armaments. The new edition has been brought down to date by Hans Helmolt, who has incorporated his revisions in Ratzel's text.

Writing at a time when Germany was undecided as to her naval policy, the author has marshaled his knowledge of geographical influences in the past to insist upon the necessity of vigorous maritime expansion. Although this was the main purpose, Ratzel has implied rather than expressed his Pan-Germanic leanings. In a series of essays of great literary charm, he has restated his familiar principles of the cosmopolitanism of maritime nations. He sees those

XUM

nations that were purely continental gradually becoming maritime as well, and arrives at the thesis that, more than ever in the past, the strength of a nation depends upon its combined land and sea power. On the whole, events since the writing of this pamphlet have verified its predictions to a remarkable degree.

CARL O. SAUER.

Jenseits der Hochkultur. Ein Beitrag zur Wertschätzung der Menschheit. Von A. Sokolowsky. 84 pp. Ills. Deutsche Verlagsgesellschaft, Hamburg, 1912. Mk. 3. 9 x 6.

Few, in the present stage of knowledge of human societies, will hold to the former view that the spiritual life of man is a gift from outside and that morals designate his success in conforming his life in general to this external rule. Accordingly there will be hesitation in accepting Dr. Sokolowsky's position that the moral life arises from social and economic conditions. The subject is too great to be dealt with in a tract. The moral life is that which conforms to the public opinion of the community, and public opinion is always conservative and lags fondly with outworn creeds. The genesis of such public opinion and of the system of morals thereupon dependent becomes the great theme of those who study the life of primitive peoples. The author has directed attention to a few picturesque examples, just enough to remind us that sociology is scarcely practicable without ethnology.

WILLIAM CHURCHILL.

Homo Sapiens. Einleitung zu einem Kurse der Anthropologie. Von Dr. V. Giuffrida-Ruggeri. Autorisierte Übersetzung aus dem italienischen. vii and 198 pp. Map, index. A. Hartleben, Wien und Leipzig, 1913. Mk. 5. 9½ x 6½.

For several years Naples has been the center of the most recondite research into the origin of man, his development from genera lower in the scale of life, the modification of anthropoid types into the single genus and single species which at the present is considered to hold all the races of modern man. The Germans have translated for their own universities Dr. Giuffrida-Ruggeri's introduction to the science in which his countrymen lead and of which among them he is by no means the least distinguished worker. He announces opposing theories and reserves the argument of his own belief, yet his comment is illuminating upon each theory as he passes it under review. Steering a safe course between the polygenetics and the monogenetics he prepares the student by a clear statement of the elements now classed as taxonomic or variation due to external causes, and shows how much may safely be accepted of the newer theories and how much must be dealt with as yet on trial. Beginning with a distinct determination of what characters are hereditable he passes to a discussion of mutation and fluctuation phenomena and finally he considers the relative value of the taxonomic characters and the importance of the influence exerted by isolation. It is a most inspiring treatise. Students will find it a valuable array of the principal theories of the past of man. Readers who may not spare the time to prosecute further research will find this volume a most interesting setting forth of the sum of our present knowledge of the man who preceded us and from whose brute station we have taken our departure.

WILLIAM CHURCHILL.

The Golden Bough. A Study in Magic and Religion. By J. G. Frazer. 3d edition. Part VI: The Scapegoat. xiv and 453 pp. Index. Macmillan & Co., Ltd., London, 1913. 10s. 9 x 6.

The prominent feature in this definitive edition of the last chapter in the study of the Dying God is that Dr. Frazer has removed the Crucifixion from its former position in the text and set it into an appendix. We are surprised at this half-way measure. The learned author brought upon himself a storm of protest by including the episode in his study of comparative religion. We feel sure that the mere change of position and the employment of a slightly smaller type will not satisfy in the least those who were shocked at the first

publication. Rightly or wrongly this will be the point upon which this new edition will be criticized. For the rest it remains the true encyclopedia of all that it is known on the theme of magic and other belief contained within the scope of the sacrifice for sin. As throughout the Golden Bough, we observe that all data are accepted at full value and, in places, this leads to false interpretation because the basic records lacked accuracy. WILLIAM CHURCHILL.

Lessons in Elementary Tropical Hygiene. For the use of pupils in tropical schools. By H. Strachan. xi and 116 pp. Ills., index. Constable & Co., Ltd., London, 1913. 1s. 7½ x 5.

An admirable book, written in the form of lectures for schools, using simple language, and dealing with diseases and how to prevent them; parasites, "germs," the blood, carriers of diseases, malaria and mosquitoes, the improvement of sanitation in the tropics, etc. As useful and interesting for most adults as for students.

The Jews of To-day. By A. Ruppin. Translated from the German by M. Bentwich. xxii and 310 pp. Index. H. Holt & Co., New York, 1913. 7½ x 5½.

The German work, of which the present book is an English translation, raises the question whether the Jewish people of to-day will be able to resist the disintegrating social and economic forces which tend to strip it of its religious and racial peculiarities, and to assimilate it in culture and civilization to the various peoples among which it is domiciled. The answer given to this question is a hopeful affirmative, tinged nevertheless with some little doubt. The hope arises from the natural predisposition of the writer to his inborn creed and race feeling. The doubt springs from his scientific training in sociology and economics, which makes him realize that social and economic forces are as resistless and as relentless as are molar, molecular, and atomic forces. He admits that the only hope of resisting the assimilating power of these forces lies in the back-to-the-land movement of present day Zionism. But it may be well doubted by all conversant with ethnology and sociology whether any attempt to infuse new life into a disintegrating nationality by any artificial methods of language revival, or territorial grouping, can succeed. The chapter on Zionism is most interesting. DAVID H. BUEL.

HISTORICAL GEOGRAPHY

History of Geography. By J. Scott Keltie and O. J. R. Howarth. vii and 208 pp. Maps, ills., index. G. P. Putnam's Sons, New York, 1913. 75 cents. 6½ x 4½.

A concise history of the beginnings and progress of geographical knowledge and the development of geographical science to the present time. On the whole, an excellent brief treatment of the subject by authoritative writers; with a short bibliography, which well might have been extended to include more of the fundamental German works. The book says (p. 141) that "tne connection of the river Welle with the Congo system was established by W. Junker." It is a curious fact that Junker died in the belief that the Welle, which he traced from the west, finally turned north to the Shari-Chad basin. It remained for Van Gèle, to prove that the Welle-Mobangi is the largest Congo tributary.

ECONOMIC AND COMMERCIAL GEOGRAPHY

The Banana: Its Cultivation, Distribution and Commercial Uses. By W. Fawcett. With an introduction by Sir Daniel Morris. xi and 287 pp. Ills., index. Duckworth & Co., London, 1913. 7s. 6d. 9 x 6.

The author, who has been in close touch with banana planting for about thirty years and is an authority on the subject, has brought together here a large mass of information as to the distribution of the plant in many lands,

XUM

its cultivation and the development of the trade. The zone of the banana nearly girdles the earth and its régime in many lands is here described. We have heard much of the banana in Africa but Sir Harry Johnson is quoted in this book as saying that while the plantain is widely cultivated in that continent, the banana is not common and is of recent introduction, Arab or Portuguese.

Cocoa: Its Cultivation and Preparation. By W. H. Johnson. Imperial Inst. Handbooks. ix and 186 pp., index. John Murray, London, 1912. 5s. 9 x 6.

Mr. Johnson says that the cacao tree thrives best in a hot, equable, moist climate with a well-distributed rainfall. Its cultivation is limited to lands lying between 20° N. lat. and 20° S. lat. Within these parallels the industry is seldom profitable at a higher elevation than 2,000 feet, nor where a protracted dry season occurs. As it is, there are more than 2,000,000 acres under cacao cultivation.

With this important industry the author deals in a careful and detailed manner. Among the many topics are the climatic and soil requirements of cacao trees, laying out a plantation, shading and inter-crops, propagation and general cultivation, fertilizing, diseases, harvesting, fermentation, washing and sun-drying, amount of yield, initial and running expenses of a plantation, manufacture and uses of cocoa. The work is illustrated with photographs.

WILBUR GREELEY BURROUGHS.

All About Coconuts. By Roland Belfort and A. J. Hoyer. xii and 201 pp. Ills., index. St. Catherine Press, London, 1914. 6s. 9 x 6.

The cultivation of the cocoanut is one of the great and growing industries. Its annual value is now twice that of the rubber industry and has nearly doubled in the past few years. This book gives a full account of the cocoanut and its various products, its commercial value, diseases, pests, development and profits of the industry, fertilization, methods of marketing, etc.

The Farmer of To-morrow. By Frederick I. Anderson. vii and 308 pp. The Macmillan Co., New York, 1913. $1.50. 7½ x 5½.

In a recent address before a conservation congress, Ex-President Taft predicted that the United States will have attained a population of 200,000,000 in another fifty years, at the present rate of increase. This being true, can enough food products be raised in the United States to feed this multitude? Mr. Anderson shows that enough food products can be raised. He points out that less than one-half of the 900,000,000 acres owned by the farmer of to-day is improved; and nearly two-thirds of this land, counted as farm land, has not yet been called on to produce food. Also, there are swamps, forests, arid, and semi-arid lands that can be reclaimed and made productive. Thus without increasing the efficiency of its cultivated land, the United States still possesses enough resources of land as yet untilled, to feed double the population of to-day.

With the subject of our present farming system and the reclamation of our waste areas, the author deals at length, treating these questions from an economic viewpoint. Having solved the problem regarding the acreage necessary to support the people of the United States in the rather near future, the author takes up another issue of vital importance. According to the most generally accepted theory of soil fertility the elements necessary for plant growth must be added to the soil or the soil will eventually become infertile. These food elements have been added in great part by minerals mined from the earth. These deposits, however, will become exhausted, and with no added commercial fertilizer, great areas of farm land will cease to produce crops, simply because the food upon which the plant exists is no longer in the soil. A recent theory has been advanced, supported with numerous experiments by the United States Bureau of Soils, that does away with the gloomy prospect of ultimate starvation. The new theory states that potash, phosphorus, and calcium are present in the soil in inexhaustible quantities and are

at all times soluble, ready for plant consumption. It is deleterious substances which form in soils that render the land unproductive, and not that the food elements have become exhausted. The most widely found toxin is a compound called dihydroxystearic acid. It has been found that on injecting this acid into a fertile soil, the soil will become infertile. Sterilizing agents, however, have been discovered that will restore the soil to fertility; but for a detailed account of the subject, one must read this most interesting book.

WILBUR GREELEY BURROUGHS.

The Use of Vegetation for Reclaiming Tidal Lands. By Gerald O. Case. 36 pp. Ills. Reprinted from *Engineering*, Aug. 22 and Sept. 12, 1913. London, 1913. 2s. 7½ x 5.

"It is probable," says Mr. Case, "that in the near future 2,000,000 acres of excellent land will be won from the sea to agriculture." This is to be accomplished by vegetation on the foreshore transforming the bare sand or mud into salt marshes. This work will be carried out in estuaries, sheltered bays, areas between islands and the mainland, and on the lee side of shingle or sand spits. A salt marsh having been formed and built up to ordinary high-tide level by vegetation, "it can then be reclaimed by an inexpensive embankment constructed to prevent the land from being overflowed by high spring tides." It has been customary in the past to wait until the original vegetation has covered the foreshore, but Mr. Case suggests that by planting suitable vegetation, large areas, covered by high tide, which now are void of plant life would, at small cost, be formed into salt marshes and could eventually be enclosed by an embankment. An account is given of coasts in various stages of reclamation, the plants most useful for this purpose, and in fact everything pertaining to the subject. The book should prove of practical value.

WILBUR GREELEY BURROUGHS.

Date Growing in the Old World and the New. By Paul B. Popenoe. With a chapter on the food value of the date by Charles L. Bennett. xviii and 316 pp. Ills., index. West India Gardens, Altadena, Cal., 1913. $2. 8½ x 6.

An authoritative book on an industry that is now prominent in our own country and is certain to become one of the largest fruit enterprises in California and Arizona. For two years the author was gathering his material in the most famous date growing regions of the Orient, having been appointed to this mission by the West India Gardens of Altadena, California. After thirty pages given to brief descriptions of the regions in which commercial date growing is now an established industry, the author describes the propagation of the date palm by offshoots and by seed, its culture in which irrigation is the chief item, pollination, handling the crop, artificial ripening, diseases and pests, the classification of dates, profits of the industry, Arab uses of the date, its food value, and date varieties. The book is finely illustrated, but a good map showing the distribution of the date would have been advantageous.

Natural Sources of Energy. By A. H. Gibson. 131 pp. Maps, ills., index. (Cambridge Manuals of Science); G. P. Putnam's Sons, New York, 1913. 7 x 5.

This little work on the world's energy problem is not technical and is adapted for general reading. Discussing sources of energy that will remain to the human race after coal, petroleum and peat are exhausted, the author treats of (1) energy leaving the sun, and reaching the earth as radiant heat; (2) energy of fuels such as vegetable fibres and oil, timber and alcohol of which a permanent supply will exist so long as present seasonal and climatic conditions continue; (3) heat energy stored in the earth; (4) the energy of rivers and waterfall; (5) the energy of the waves of the sea; (6) the energy of the wind. Most of the book is given to an examination of these supplies of energy and of their possibilities as factors in any general power scheme. His main conclusion is that, even when the fossil fuels are exhausted, ample supplies of energy, renewable year by year, will remain for all the activities of the human race. The book is a worthy contribution to the subject it treats.

XUM

Ocean Trade and Shipping. By Douglas Owen. Cambridge Naval & Military Series. ix and 277 pp. Map, index. University Press, Cambridge; G. P. Putnam's Sons, New York, 1914. 10s. 6d. 9 x 6.

This book is an attempt to cover for college students the whole field of "trade and shipping" as an Englishman conceives them. The field is pretty well stretched, too, for some of the students to whom the author is a lecturer are prospective naval officers and are expected to know about the ships' papers in war as well as in peace. There is also a full fourth of the book devoted to Lloyd's and insurance.

The first part of the book, dealing with ports, port competition, port construction, and the influence of natural factors on their construction and use, is most likely to be of interest to geographers. This book with its 71 short chapters ranging from Ports to Passenger List and the Insurance of War Risks is the first volume to which one should turn who wishes light on the operations of ships and shipping. It is well indexed and contains a reproduction of a typical page of Lloyd's register, a bill of lading, and a charter party.

The author, who has previously written a book on docks, is a master of the facts about ship operation, and he also is one of the few who writes with mastery of traffic and rates. His six-page discussion of "shipping rings and rebates" is an excellent short presentation, but the discussion of Mr. Morgan's International Mercantile Marine seems to be needlessly academic for one whose experience had brought him so close to the facts.

J. Russell Smith.

Rubber and Rubber Planting. By R. H. Lock. xi and 245 pp. Ills., index. G. P. Putnam's Sons, N. Y., 1913. $1.50. 7½ x 5.

A comprehensive and at the same time a concise account of the rubber industry, intended to advance the intelligent cultivation of the trees and the harvesting of the product. Considerable emphasis is laid on the physiology of latex production. A knowledge of this ought to help the planter to avoid injury to his crop and to prevent a diminution of the yield. Planting operations in all the many phases and protective measures against pests and diseases round out the presentation. Brief chapters on the chemistry of india-rubber and manufacture of rubber goods end the volume. The book, while it makes a special appeal to manufacturers and planters, would be a proper and valuable addition to any reference library on commercial and industrial geography.

Robert M. Brown.

Coconut Cultivation and Plantation Machinery. By H. L. Coghlan and J. W. Hinchley. x and 128 pp. Ills., index. Crosby Lockwood & Son, London, 1914. 7 x 5.

This is largely the experiences of a manager of Malayan estates and is intended to supply the planter with a guide for the various stages of the cocoanut industry. It includes, besides the discussion pertaining to the raising of the trees, such as the soil, its preparation, seed nuts, pests and cultivation, many valuable suggestions concerning the marketing and possibilities of manufacturing of the crop as well as catch crops which will yield a revenue during the years of growth of the trees. Many tables and estimates are inserted to guide the planter, and a review of the industry in the West Indies yields a broader view of the field and conditions. Robert M. Brown.

The Fertility of the Soil. By E. J. Russell. Series: Cambridge Manuals of Science, etc. 128 pp. Ills., index. G. P. Putnam's Sons, New York, 1913. 6½ x 5.

Beginning with a history of the formation of the soil, the author proceeds to a consideration of the formation of plant food in the soil; soil fertility; and the six requirements necessary for the best plant growth, that is, water, air, temperature, food, root room, and absence of harmful factors, each of these topics being discussed briefly. He also considers the various types of soils, medieval farm practice, the general bearing on the fertility of the soil of modern agricultural systems, the limit of the productiveness of soils and

how this limit can be raised, fertilizers to be used, special treatment for clays and sands and reclamation of moorland.

The work is illustrated with a number of photographs. The author is Director of the Rothamsted Experiment Station, and should know concerning that of which he writes. His treatment of the subjects under discussion are clear and simply told. WILBUR GREELEY BURROUGHS.

Allgemeine Verkehrsgeographie. Von Kurt Hassert. viii and 494 pp. Index. Maps, index. G. J. Göschen, Berlin, 1913. Mk. 10.

The book attempts—and very successfully, too—to work out a system of the geography of traffic, examining the geographical foundations of the existing traffic conditions as evidenced in the interdependence of traffic, man, and nature. It is divided into four parts: the first, more theoretical in character, is a study of traffic in general as one of the geographical phenomena on the surface of the earth, *e.g.*, a phenomenon of locomotion. The following definition of traffic is given: "The locomotion, mostly for economic purposes and by special means of transportation, of all kinds of objects, *viz.*, people, goods, and ideas (news), from some place of issue to a place of destination, in order to establish an exchange of the natural resources of earth and man." Thus traffic becomes the natural foundation of commerce, just as the latter is the principal stimulus for traffic. The two are interdependent. The need of an exchange increases in proportion with the differences of soil, climate, and people of any two given countries. The geography of traffic is therefore part of economic geography, just as traffic is of economics. Its special object is to describe the geographical distribution of the lines, means, and places, of traffic and to explain their existence by virtue of the existing natural and cultural conditions. Under the influence of those conditions traffic has developed from local to interurban, national, international, continental, and world traffic, of which at present four-fifths is carried on by water and one-fifth only by land. Its highest types are found in connection with the highest culture, and the flag often follows it.

The fundamental geographical factor in traffic is distance. Distinction must be made between mathematical or geographical (air-line) distance and economic or actual distance, the latter meaning the time which is needed to get goods or people from one place to another. As traffic is apt to follow, not always the shortest, but rather the easiest line, the latter is the more important. It depends upon the quality of the road, the means of transportation, the geographical character of the intervening country, political conditions, scarce or dense population, vegetation, composition of the soil, etc. To illustrate these actual or economic distances is the object of the so-called isochronal or isotimal charts, *viz.*, charts indicating the distances which traffic can cover in a given time, the isochronal lines connecting the places which are reached within the same time from a given center.

Not only the distances, but also the means and ways of transportation are geographically determined, in the first place by the climate (camel, sleigh, etc.). As the degree of civilization of the inhabitants determines the greater or lesser density of traffic, and the degree of perfection of its ways and means, a climate unfavorable for the development of a higher civilization will also be unfavorable for traffic.

The maximum which traffic may reach in any part of the world is largely dependent upon geographical location. Europe and North America, for instance, will always be favored countries in this respect on account of the easy access which they have to the most important countries by land or sea.

The second, third, and fourth parts of the book are given over, respectively, to the special description of land traffic, ocean traffic, and the traffic of news, which is quite a new aspect in geography. In the second part, special chapters are devoted to the continental roads, caravan routes, and the development, economic geography, and geographical distribution of railroads. The railroad systems of each continent, as well as the inland waterways, are treated in separate chapters. The third part contains chapters on the history of ocean navigation, the geographical importance of the oceans, the most im-

XUM

portant navigation companies, the routes of sailing vessels, piracy, seaports, the influence of straits and isthmuses on shipping routes, the Kaiser Wilhelm, Suez, and Panama Canals. The fourth and last part discusses the languages of traffic, the geographical foundations of the mail service, telegraph, telephone, and cable lines.

The text is illustrated by twelve maps and diagrams, and the rich information which it conveys is made accessible by an elaborate index of names and subjects. It ought not to go unnoticed that of all the books treating with such a "dry" subject this is the first, to my knowledge, in which the author has succeeded in presenting the matter in a way which is not only instructive but also attractive and pleasant to the general reader. M. K. GENTHE.

METHODOLOGY AND TEACHING

The Clarendon Geography. Vol. 2, Part 4: Asia. Part 5: Africa and Australasia. Part 6: America. viii and 376 pp. Maps, ills., index. Clarendon Press, Oxford, 1913. 75 cents. 7½ x 5½.

In this, the second and last volume of the Clarendon Geography, the author considers the continents of Asia, Africa, Australasia, and North and South America. For each of these continents the general physiography, climate, plants, animals, and man are taken up, as well as a somewhat detailed study of the political divisions. At the end of each chapter are a number of interesting exercises for class-room and laboratory use, which serve to emphasize important points in the chapter just completed. Numerous well-chosen maps, some of them colored, diagrams, tables, and photographs add to the value of the work. WILBUR GREELEY BURROUGHS.

Handelsgeographie. Von Fritz Regel. 6th edit. xv and 500 pp. Index. W. Violet, Stuttgart, 1913 (?). Mk. 4. 7 x 5.

Professor Regel's book, now in the sixth edition, has been considerably expanded. Like many other German texts on commercial geography, it is compacted with facts including general geography; but, like some other German texts, it fails to connect closely the facts of geography with commerce and trade. The teaching of commercial geography in our country tends more and more to the correlation of geographical data with commerical and economic development and to a clear setting forth of the principles upon which such development depends. This book, on the other hand, has an enormous mass of excellent data, but much of it is simply raw material with no attempt to apply it.

Elementary Commercial Geography. By Hugh R. Mill. Revised by Fawcett Allen. xii and 215 pp. Index. University Press, Cambridge; G. P. Putnam's Sons, New York, 1914. 1s. 6d. 7 x 5.

This book, in its first edition, was one of the earliest text-books of commercial geography Its statistics have now been brought up to date, and more detailed descriptions are introduced of those countries which have shown recent commercial development. The first fifty pages devoted to "General Principles of Commercial Geography" still hold their place as one of the best short treatments of the subject.

A Commercial Geography of the World. By O. J. R. Howarth. Series: The Oxford Geographies. 236 pp. Maps, index. Clarendon Press, Oxford, 1913. 2s. 6d. 7½ x 5.

The basis for a good commercial geography is here in outline, but not in text. The text lacks solidity. It is not well knit. Like so many other "commercial" geographies, this one is largely an enumeration of products with a statement as to their distribution.

Fig. 22, "Diagram of Main Transcontinental Railways in Western Europe," is good. The maps in general, however, lack parallels and meridians or, when shown, do not include the degrees represented by them.

A few errors may be noted that unfortunately are almost characteristic of the book. On page 141:—"The greater lake vessels, called 'whale-backs,' carry cargoes up to 250,000 bushels." Whale-backs are practically a thing of the past on the Great Lakes, being now replaced by great steel steamers that carry upwards of 400,000 bushels. Again, p. 195:—"Minnesota leading among all the states in wheat production." This is no longer true and has not been for several years. The introductory chapters would lead one to believe that the book is to treat of the dependence of commerce on climate. However, after five chapters, the author leaves this phase, returning to it for a while only in the 14th chapter and again in the 16th to 18th chapters. EUGENE VAN CLEEF.

Erdkunde für höhere Schulen. Von Heinrich Fischer, A. Geistbeck und M. Geistbeck. Ausgabe E. In 6 Teilen. 1. Teil: 90 pp. 70 pfg. 2. Teil: 97 pp. 75 pfg. 3. Teil: 78 pp. 75 pfg. 4. Teil: 54 pp. 60 pfg. 5. Teil: 51 pp. 50 pfg. 6. Teil: 132 pp. 90 pfg. Maps and ills. in each. R. Oldenbourg, Berlin & München, 1912. 8½ x 6.

The first part of this work gives a glimpse of the world and a fuller view of Central Europe, seeking to begin with pictures and descriptions of things selected as of geographical importance. The second treats the rest of Europe in the same way, but tries to bring out relations—how geography affects men in some important cases rather than to tell a mass of details. Then follow four parts "for schools that give geography an hour a week," (3) other continents and the German colonies, (4) the German Empire, (5) recent economic development of Europe, with mathematical geography, and (6) review and anthropological matter. All through a few things are sought out and found, the things that seem to matter. The pictures illustrate this, for their selection is excellent. They are not especially abundant, from our American point of view, and not all of them are well made, but they show great progress toward that little group of typical pictures that all geography teachers ought to have at hand. The choice of these pictures would justify purchasing the series for them alone. Especial interest in the text attaches to it as a very intelligent effort to escape from smothering detail. MARK JEFFERSON.

Blackie's Elementary, Regional and Practical Geographies. By David Frew. Africa and Australasia; Asia; General Survey of the World; North, Central, and South America. iv and 80 pp. and maps in each. Blackie & Son, Ltd., London, 1913. 6d. each. 7 x 5 each.

These four volumes together form, with the exception of the treatment of Europe, a fairly complete comprehensive outline of the physical geography of the world for elementary students. Volume one is a brief outline or summary of physical geography, including the usual contents. In the other volumes the continents are discussed *in extenso* from the standpoint of physiography and then some details of political and economic conditions are given. The matter presented, however, though well systematized and ordered, is in many cases expressed in so precise and formal a manner as to be of little service to the pupils. As a reference volume for a hurried teacher the volumes would be of use. RICHARD ELWOOD DODGE.

The Junior Scientific Geography. Book 1: Physical Geography. By Ellis W. Heaton. viii and 152 pp. Ralph, Holland & Co., London, 1911 (?). 1s. 3d. 7½ x 5.

Teachers of physical and mathematical geography should find this book helpful. It is suggestive and original in its treatment of the subject matter and its value is increased by a large number of interesting and instructive diagrams. The book has only five chapters, but the text is written in concise style and contains more than the chapter headings suggest. The chapter on map work covers the subjects of projections, contour maps, sections and map-making. The presentation of this material is new and can easily be put into practice. Other chapters take up the earth as a whole, division of land and water, the atmosphere and water on the earth. In the 152 pages there are

XUM

over 160 illustrations. The illustrations are all simple, sometimes crude, but they have good explanatory value and can be easily transferred to the blackboard during the progress of the lesson.

The value of the book lies in the new and vigorous handling of topics which have been made uninteresting to pupils through the lack of proper methods of presentation and in the vivifying of lessons ordinarily considered too difficut for the pupils of the grades. ROBERT M. BROWN.

The Teaching of Geography in Elementary Schools. By R. L. Archer, W. L. Lewis and A. E. Chapman. 255 pp. Index. Macmillan Co., New York, 1910. $1.10. 8 x 5.

Here is a volume filled with sound, stimulating advice for the geography teacher in elementary schools of Great Britain. The authors show they are intimately acquainted with the limitations and possibilities of grade pupils, the extraordinary deficiency in geographical equipment of the average elementary teacher, and with the modern concept of the subject. They indicate the first by suggesting a carefully worked-out course of study that is progressive and nicely adapted to the abilities of the children; the second, by giving very minute direction as to method and material, and a vast amount of subject matter that occupies more than half of the book; the last, in emphasizing the causal element in geography, by giving climate the largest place among the factors, and always keeping the life responses to the front. A permanent interest in geography is declared to be one of the main aims in teaching the subject. If even less-than-the-average teacher follow this book carefully such an end would seem difficult to miss. SUMNER W. CUSHING.

The Teaching of Modern Subjects: Geography. By James Welton and W. P. Welpton. University Tutorial Series, pp. 278-358. Index. University Tutorial Press, Ltd., London, 1912. 1s. 7 x 5.

An admirable little book of suggestions, especially for Yorkshire, where the author lives (Leeds). Out-of-door work is urged as essential from the start and very practical suggestions are given what to do by hill and stream. Mr. Welpton has a high ideal of the utility of geography for man's culture and thinks of it as the study of man in relation to the earth rather than of the earth in relation to man.

He shows how the study of a locality may lead to a notion of the whole country and the world beyond. London as a center is considered: "No abstract treatment of this conception should be attempted. Only broad, plain facts that can be exemplified by people, events, and buildings should be noticed." He believes in the concrete and realizes the advantages of illustration for beginners. He would "illustrate" the roundness of the earth, not "demonstrate" it.

The two climatic bugbears, "Hot air rises" and "Moist winds against cold mountains give rain," come in for merited condemnation. A good book.
MARK JEFFERSON.

A Laboratory Manual of College Geography By Lawrence Martin, E. F. Bean and F. E. Williams. xiv and 238 pp. Maps, index. University of Wisconsin, Madison, 1913. 70 cents. 10 x 7½.

Professor Martin and his colleagues have prepared and printed the first American manual for college geography teaching, and have thereby testified to the advance and lack of progress in geography teaching in American colleges and universities. The book is planned for a half-year of laboratory work and includes fifty-one exercises, of which thirty-one are devoted to Europe, seven to Asia, six to North America and the remainder to Antarctica, Australia, Africa and South America.

Each exercise includes questions with spaces for replies, and many of the exercises are based on outline maps, with which the text is well supplied.

The exercises are well planned and present in clear and usable form many of the facts of geography which should be a necessary part of the equipment of every college student. Many of them present large problems that require

thought and advanced training in physiography and geology. The questions will be generally approved as pertinent to the needs of the pupils for whom intended.

But what a testimonial many of these necessary exercises are as to the deplorable status of secondary school and college geography in this country! For instance, Exercise IV, devoted to the German Empire—General, could be done easily by a well-equipped pupil in the seventh or eighth grade of the elementary school. The questions call upon the student to name the countries bordering Germany; to print in the names of the bordering waters, rivers, mountains and cities; to measure areas by using map scales and compare with the area of Russia and Wisconsin; and to compare the density of population of Germany and Wisconsin. Other questions are, "What parts of the boundary of Germany are natural?" "Is the North Sea or the Baltic the more desirable for seaports? Why?" "Name some ports on the North Sea, on the Baltic," and several more of a similar degree of difficulty. The principal reference text is an elementary school geography.

In previous training in geography and in adequate materials for advanced study our college students are woefully handicapped. This manual is a most commendable contribution toward strengthening college geography, and the exercises based on detailed map study are excellent and advanced in type. Yet an examination of the exercises shows that advanced work is far more possible in physiography than in regional or commercial geography.

The volume is a distinct contribution to geographical education and the authors are to be complimented for their success in blazing a new trail. May equally adequate opportunities for better work soon be furnished through texts and atlases of an advanced type. RICHARD ELWOOD DODGE.

An Elementary Geography of Scotland. By Marion I. Newbigin. Series: Oxford Geographies. 135 pp. Maps, ills., index. Oxford University Press, New York, 1913. 40 cents. 7½ x 5.

An excellent little book for beginners in geography in Scottish schools and a good model for home geographies in any country or state. Simple and interesting in manner of presentation, causal relations nicely brought out, physical and human geography well balanced and correlated, summaries, questions and exercises at the end of each chapter, telling illustrations, and having the topics so arranged that there is a broadening and building up of ideas as you advance. R. H. WHITBECK.

Principles and Methods of Teaching Geography. By Frederick L. Holtz. xii and 359 pp. Maps, ills., index. Macmillan Co., New York, 1913. $1.10. 7½ x 5.

A sane, mildly conservative, fad-free discussion of the teaching of geography in the elementary school. While it makes no attempt to blaze new trails, it stands for geography in the strictly modern sense. The author's ideas on the teaching of geography are likely to commend themselves very generally to teachers, for he advocates no radical departure from the practices of the best teachers, presents no cure-alls, and freely recognizes merits in the various "methods" of teaching the subject. He urges the emphasizing of human geography and the subordination of mathematical and physical in the grades; holds that it is, in ordinary schools, futile to teach only through the type study method; recommends the use of the text book as probably a safer guide than any that the teacher can prepare, but recognizes that even the best text book is of necessity a compressed, laconic, treatment. He advocates the correlation of nature study and geography in the lower grades and holds that history and geography are inseparable. These and many other tenets in the author's creed are sound if not new. In fact, there is little if any new ground broken. The book shows clear, well-balanced thinking and a wide knowledge of the pedagogical and historical aspects of geography.

The list of geographical books in Chapter XXV is not sufficiently critical. For example, under "Books of Method," the first title given is Davis's "Geographical Essays," the most advanced treatise in English. The next book

XUM

in the list is Frye's "Child and Nature," one of the most elementary of books. Yet nothing indicates that the books are not of the same general class. Dates of publication ought to appear, at least with the older books. The book ought to serve a useful purpose in a number of ways—in normal and training schools, in reading circles and in the hands of teachers. If its main suggestions were generally practiced, geography teaching in America would be improved.

R. H. WHITBECK.

OTHER BOOKS RECEIVED

These notes do not preclude more extended reference later

NORTH AMERICA

THE AMERICAN COLONIES 1583-1763. By A. W. Tilby. Series: English People Overseas, Vol. 1. 2nd edit. 302 pp. Constable & Co., London, 1911. 4s. 6d. 8½ x 5½.

THE IMPORTANT TIMBER TREES OF THE UNITED STATES. A manual of practical forestry. By S. B. Elliott. xv and 382 pp. Ills., index. Houghton Mifflin Co., New York, 1913. 8 x 5.

AFRICA

LA CONQUÊTE DE L'ALGÉRIE. Par J. Mazé. 398 pp. Ills. A. Mame et Fils, Tours. 14s. 6d. 12 x 9.

LE "COUP" D'AGADIR. Origines et développement de la crise de 1911. Par P. Albin. iii and 396 pp. Index. F. Alcan, Paris, 1912. 7½ x 5.

VOYAGE AU PAYS DES SENOUSSIA. À travers la Tripolitaine et les pays Touareg. Par le Cheikh Mohammed Ben Otsmane El-Hachaichi. Traduit par V. Serres et Lasram. 2nd edit. 316 pp. Index. A. Challamel, Paris, 1912. 4s. 9d.

GUIDE DE L'OFFICIER MÉHARISTE AU TERRITOIRE MILITAIRE DU NIGER. Par Capitaine Bouchez. Gouv. du Haut-Sénégal et Niger. xiii and 307 pp. E. Larose, Paris, 1910. 10 x 6½.

A RESIDENT'S WIFE IN NIGERIA. By Constance Larymore. 2nd edit., revised. xviii and 299 pp. Map, ills., index. E. P. Dutton & Co., N. Y., 1911. $1.50. 8 x 5½.

HISTOIRE DU SÉNÉGAL DU XVE SIÈCLE À 1870. Par P. Cultru. 376 pp. E. Larose, Paris, 1910. 9½ x 6½.

KAMERUN. Von E. Sembritzki. 254 pp. Maps, ills. W. Süsserott, Berlin, 1908. 8½ x 6.

IN WILDNIS UND GEFANGENSCHAFT. Kameruner Tierstudien. Von J. von Oertzen. 106 pp. Map, ills. W. Süsserott, Berlin, 1913. 10 x 7.

LE DÉVELOPPEMENT ÉCONOMIQUE DU KATANGA. By S. Rosenthal. 2nd ed. 181 pp. Soc. Belge de Librairie, Brussels, 1911. 10 x 6½.

REPORT ON THE WORK OF THE COMMISSION sent out by the Jewish Territorial Organization under the auspices of the Portuguese Government for the purpose of a Jewish settlement in Angola. By J. W. Gregory. xiii and 50 pp. Map, ills. Ito Offices, London, 1913. 13 x 8.

CATALOGUE OF BOOKS AND PAMPHLETS RELATING TO AFRICA, south of the Zambesi, in the English, Dutch, French, and Portuguese languages, in the collection of George McCall Theal. 408 pp. T. M. Miller, Capetown, 1912. 9 x 5½.

SOUTH AFRICA 1486-1913. By A. W. Tilby. Series: The English People Overseas, Vol. 6. 632 pp. Constable & Co., London, 1914. 7s. 6d. 8½ x 5½.

OVAMBOLAND: LAND, LEUTE, MISSION. Mit besonderer Berücksichtigung seines grössten Stammes Oukuanjama. By H. Tönjes. vi and 316 pp. Map, ills. M. Warneck, Berlin, 1911. 9 x 6½.

OVAMBOLAND. Versuch einer landeskundlichen Darstellung nach dem gegenwärtigen Stand unserer geographischen Kenntnis. Inaug-Dissert., Univ. Kiel. Von G. Nitsche. 154 pp. Maps. Kiel, 1913. 9½ x 6.

MADAGASCAR 1638-1894. Établissement des Français dans l'Ile. By Capitaine de Villars. vii and 264 pp. Maps, ills. L. Fournier, Paris, 1912. 8½ x 5½.

ASIA

THE CHINA YEAR BOOK, 1914. By H. G. W. Woodhead and H. T. M. Bell. 781 pp. Map, index. E. P. Dutton & Co., New York, 1914. 7½ x 5½.

IN ABOR JUNGLES. Being an account of the Abor Expedition, the Mishmi Mission and the Miri Mission. By A. Hamilton. xi and 352 pp. Map, ills. E. Nash, London, 1912. 18s. 9½ x 6½.

A MANUAL OF THE GEOLOGY OF INDIA. Stratigraphical and Structural Geology. 2nd edit. By R. D. Oldham. xxiii and 543 pp. Maps, ills., index. Geological Survey, Calcutta, 1893. 10 x 7.

PUNJAB RIVERS AND WORKS. A description of the shifting rivers of the Punjab plains and of works on them, namely inundation canals, flood embankments and river training works with the principles for designing and working them. By E. S. Bellasis. 2nd edit. 64 pp. Ills. E. & F. N. Spon, London, 1912. 8s. 13 x 8½.

BALI EN LOMBOK. Reisgids voor Toeristen. Door A. H. Pareau. 122 pp. Maps, ills. J. H. de Bussy, Amsterdam, 1913. Fl. 1. 5 x 8.

AUSTRALASIA AND OCEANIA

AUSTRALASIA 1688-1911. By A. W. Tilby. Series: English People Overseas, Vol. 5. 447 pp. Constable & Co., London, 1912. 6s. 8½ x 5½.

THE ANIMALS OF AUSTRALIA. Mammals, Reptiles and Amphibians. By A. H. S. Lucas assisted by W. H. D. Le Souëf. xi and 327 pp. Ills., index. Whitcombe & Tombs, Ltd., London, 1909. 9 x 6.

THE QUEST AND OCCUPATION OF TAHITI by emissaries of Spain during the years 1772-1776. Translated into English and compiled, with notes and an introduction, by Bolton G. Corney. Vol. 1. lxxxviii and 363 pp. Maps. Hakluyt Soc., London, 1913. 9 x 6.

WHO ARE THE MAORIS? By A. K. Newman. 303 pp. Map, ills. Whitcombe & Tombs, Ltd., London (no date). 8 x 5.

EUROPE

LANCASHIRE. A descriptive account of the county Palatine. By E. Evans. xi and 167 pp. Maps, ills., index. Longmans, Green & Co., New York, 1913. 80 cents. 7½ x 5.

DER OSTKANAL. Ein Wirtschaftskanal von der Weichsel nach den Masurischen Seen. Von Baurat Ehlers. 40 pp. Maps. W. Ernst & Sohn, Berlin, 1912. 11 x 7½.

THE BOTANY OF ICELAND. Edited by L. K. Rosenvinge and E. Warming. Part 1: The Marine Algal Vegetation by H. Jónsson. 186 pp. J. Frimodt, Copenhagen, 1912. 10 x 7.

POLAR

SOMMERFAHRTEN IN GRÖNLAND. Von M. Rikli and A. Heim. x and 262 pp. Maps, ills., index. Huber & Co., Frauenfeld, 1911. 9½ x 6½.

ECONOMIC AND COMMERCIAL GEOGRAPHY

LE CACAO. Production, culture, préparation. Par Y. Henry. Series: Matières Premières Africaines. 103 pp. Map, ills. A. Challamel, Paris, 1913. 10 x 6½.

XUM

ANTHROPOGEOGRAPHY

LE ORIGINI UMANE. Ricerche Paleontologiche. Di G. Sergi. xi and 202 pp. Index. L'Evoluzione Organica e le Origini Umane. Induzioni paleontologiche. xii and 240 pp. Fratelli Bocca, Torino, 1913 & 1914. L. 3.50 each. 8 x 5.

L'UOMO ATTUALE. Una Specie Collettiva. By V. Giuffrida-Ruggeri. 191 pp. Map, ills., index. Albrighi, Segati e C., Milan, 1913. L. 6. 9½ x 6½.

GENERAL

VASCO DA GAMA AND HIS SUCCESSORS 1460-1580. By K. G. Jayne. xix and 325 pp. Map, ills., index. Methuen & Co., London, 1910. 10s. 6d. 9 x 6.

NAVAL WARFARE. By J. R. Thursfield. Cambridge Manuals of Science & Literature. 151 pp. Index. G. P. Putnam's Sons, New York, 1913. 6½ x 5.

CURRENT GEOGRAPHICAL PAPERS

NORTH AMERICA

United States. BABB, C. C., C. C. COVERT, AND J. G. MATHERS. North Atlantic Coast Basins [from St. John to Rappahannock River]. (Surface Water Supply of the United States 1912, Part 1.) 240 pp. Index. *U. S. Geol. Surv. Water-Supply Paper 321.* 1914.

COVERT, C. C., A. H. HORTON, AND W. G. HOYT. St. Lawrence River Basin. (Surface Water Supply of the United States 1912, Part 4.) 149 pp. Ills., index. *U. S. Geol. Surv. Water-Supply Paper 324.* 1914.

FOLLETT, W. W., R. FOLLANSBEE, AND G. A. GRAY. Western Gulf of Mexico Basins. [Rio Grande system and interior basins in New Mexico.] (Surface Water Supply of the United States, 1912, Part 8.) 121 pp. Ills., index. *U. S. Geol. Surv. Water-Supply Paper 328.* 1914.

HINSDALE, G. Mineral springs; their analyses, classification, therapeutic uses, radioactivity, and newer methods of application; with special reference to American springs. Ills. *Trans. Amer. Climatol. Assoc.,* Vol. 29, 1913, pp. 64-94. Philadelphia.

HORTON, A. H., W. G. HOYT, AND H. J. JACKSON. Upper Mississippi River and Hudson Bay Basins. (Surface Water Supply of the United States, 1912, Part 5.) 193 pp. Ills., index. *U. S. Geol. Surv. Water-Supply Paper 325.* 1914

LUTHER, D. D. Geology of the Attica-Depew Quadrangles. 34 pp. Map, index. *New York State Mus. Bull. 172.* 1914.

RICHARDS, R. W., AND G. R. MANSFIELD. Geology of the Phosphate Deposits Northeast of Georgetown, Idaho. 76 pp. Maps, ills., index. *U. S. Geol. Surv. Bull. 577.* 1914.

SMITH, J. E. Geographic Control of Transportation in the Southeast. [Appalachian Mountains to the Atlantic Ocean and from the Potomac R. to the Floridian Province, whose boundary is approximately a line from Montgomery, Ala., to Savannah, Ga.] Map. *Journ. of Geogr.,* Vol. 12, 1913-14, No. 9, pp. 301-307.

WARREN, G. F. Statistics of Crops. Degree of accuracy of the reports of the Bureau of Statistics of the U. S. Department of Agriculture. Diagram. *Science,* No. 1021, Vol. 40, 1914, pp. 121-126.

—— Cotton Production 1913. 70 pp. Diagrams. *Bur. of the Census Bull. 125.* Washington, 1914.

—— The Publications of the U. S. Geological Survey (not including topographic maps). July, 1914. 136 pp. Index. 1914.

—— Fourth Annual Report State [Maine] Water Storage Commission 1913. 323 pp. Waterville, 1914.

Canada. CARTWRIGHT, C. T. The Production of Copper, Gold, Lead, Nickel, Silver, Zinc, and Other Metals in Canada. 86 pp. *Canada Dept. of Mines* [*Public.*] *No. 256.* Ottawa, 1913.

COLEMAN, A. P. The Nickel Industry: with special reference to the Sudbury Region, Ontario. 206 pp. Maps, ills., index. *Canada Dept. of Mines* [*Public.*] *No. 170.* Ottawa, 1913.

GOLDTHWAIT, J. W. Supposed Evidences of Subsidence of the Coast of New Brunswick within Modern Time. Maps. *Canada Geol. Surv. Mus. Bull. No. 2,* pp. 47-67. Ottawa, 1914.

—— Report on Irrigation for 1913. 172 pp. Ills., index. *Canada Dept. of the Interior Ann. Rept. 1913, Part 7.* Ottawa, 1914.

CENTRAL AMERICA AND WEST INDIES

Porto Rico. HAZARD, D. L. Results of Observations made at the U. S. Coast and Geodetic Survey Magnetic Observatory at Vieques, Porto Rico, 1911 and 1912. 102 pp. Diagrams. U. S. Coast and Geod. Surv., Washington, 1914.

SOUTH AMERICA

RICE, H. Further Explorations in the North-west Amazon Basin. Map, ills. *Geogr. Journ.*, Vol. 44, 1914, No. 2, pp. 137-168.

Argentina. CARLES, E. DE. Relación acerca de los yacimientos fosilíferos de arroyo Frías y sedimentos de las barrancas del rio Paraná al norte sur de Santa Fe. Ill. Reprint, *Anal. Mus. Nac. de Hist. Nat. de Buenos Aires,* pp. 245-252.

MONETA, J. Patagonia and Tierra del Fuego. *Journ. of Race Develop.*, Vol. 5, 1914, No. 1, pp. 30-43.

Chile. ALBES, E. The Island of Juan Fernandez. Ills. *Bull. Pan Amer. Union,* Vol. 39, 1914, No. 2, pp. 201-216.

Colombia. SAINT-LÉGIER, MARQUIS DE. La Colombie. *Bull. Soc. Géogr. Comm. de Paris,* Vol. 36, 1914, No. 7, pp. 453-486.

Paraguay. —— Commerce of Paraguay for 1913. *Bull. Pan Amer. Union,* Vol. 39, 1914, No. 2, pp. 310-318.

AFRICA

HABRAN, L. Reconnaissance par l'ingénieur Robins de la dernière section portugaise et de la section belge du chemin de fer de Lobito au Katanga, 1911. Maps. *Mouv. Géogr.*, Vol. 31, 1914, No. 18, cols. 239-243.

PARKINSON, J. The East African Trough in the Neighbourhood of the Soda Lakes. Maps, ills. *Geogr. Journ.*, Vol. 44, 1914, No. 1, pp. 33-49.

PEYRISSAC, L. L'Afrique Française en 1913. Maps. *Rev. de Géogr. Commerc.*, Vol. 40, 1914, No. 3, pp. 95-101, No. 4, pp. 127-139. Bordeaux.

Belgian Congo. La valeur économique du Bas Katanga. Map. *Mouv. Géogr.*, Vol. 31, 1914, No. 23, cols. 295-301.

British East Africa. —— Annual Report of the Land and Survey Department [Uganda Protectorate] for year ended March 31, 1914. 43 pp. Plan. Entebbe.

British Somaliland. —— La politique anglaise au Pays Somali et l'affaire du 9 août. Map. *Renseign. Colon.*, Vol. 23, 1913, No. 12, pp. 422-424.

British West Africa. MIGEOD, F. W. H. The Gold Coast: Its Physical Features, Flora, Fauna, and Ethnology. Map, ill. *Journ. African Soc.*, No. 52, Vol. 13, 1914, pp. 369-384. London.

XUM

Canary Islands. NAVARRO, L. F. Erupción volcánica del Chinyero (Tenerife) en noviembre de 1909. 98 pp. Maps, ills. *Anal. de la Junta para ampliación de estudios é investigaciones científicas,* Vol. 5, Memoria 1a. [Madrid].

Egypt. MURRAY, G. W. A Journey from Ras Benas to Qoseir. Map, ills. *Cairo Sci. Journ.,* No. 91, Vol. 8, 1914, pp. 90-92.

French West Africa. MARC-SCHRADER, L. Quand j'étais maire de Tombouctou. Ills. *Le Tour du Monde,* Vol. 19, 1913, No. 34, pp. 397-408, No. 35, pp. 409-420, No. 36, pp. 421-432.

Kamerun. LEONARD, A. G. Commercial Developments in German Kamerun. *United Empire,* Vol. 5, 1914, No. 4, pp. 327-332.

WAIBEL, L. Der Mensch im Wald und Grasland von Kamerun. Map. *Geogr. Zeitschr.,* Vol. 20, 1914, No. 4, pp. 208-221, No. 5, pp. 275-285.

WOLFF, F. Eine Bereisung der Tschadseeländer. Map. *Deutsches Kolonialblatt,* Vol. 25, 1913-14, No. 9, pp. 392-405. Berlin.

Madagascar. RICHET, E. Madagascar. *Bull. Soc. Roy. de Géogr. d'Anvers,* Vol. 37, 1913, Fasc. 3-4, pp. 223-243. 1914.

Portuguese East Africa. MUNRO, J. Production of Sugar in the Province of Mozambique. *South African Journ. of Sci.,* Vol. 10, 1914, No. 8, pp. 206-221. Cape Town.

—— Le chemin de fer belge de Beira au Zambèze. Map. *Mouv. Géogr.,* Vol. 31, 1914, No. 22, cols. 283-286.

Nyasaland. BRUCE, D. The Trypanosome Causing Disease in Man in Nyasaland. *Proc. Roy. Soc.,* Series B, Vol. 87, No. B-598, 1914. London.

ASIA

JOINVILLE, P. DE. La mission de la *Cybèle* en extrême-Orient 1817-1818: Journal de Voyage du Capitaine A. de Kergariou. Publié et annoté par —. 248 pp. Map, index. Soc. de l'Hist. des Colon. Franç., Paris, 1914.

Caucasia. KARAKASH, N. I. Geological Sketch of the Mzymta River Valley, Chernomorsk (Black Sea) Government. [In Russian.] Map, ills. *Trav. Mus. Géol. Pierre le Grand près l'Acad.-Imp. des Sci. de St. Pétersbourg,* Vol. 7, 1913, No. 4, pp. 119-180.

REINHARD, A. VON. Beiträge zur Kenntnis der Eiszeit im Kaukasus. 113 pp. Map, ills. *Geogr. Abhandlungen, Neue Folge (Veröffentl. des Geogr. Inst., Univ. Berlin), No. 2,* 1914.

Ceylon. TEMPLETON, R. S. [Report of the Ceylon Survey Dept.] (Ceylon Administration Reports, 1912-13. Part 1.—Civil). 14 pp. Maps, ills.

China. TORII, K. Populations primitives de la Mongolie orientale. 100 pp. Map, ills. *Journ. Coll. of Sci., Imp. Univ. of Tokyo,* Vol. 36, 1914, Art. 4.

—— Plunder and Destruction of Antiquities in China. Private, official, and public papers. 6 pp. Asiatic Inst., New York, 1914.

Dutch East Indies. DENINGER, K. Morphologische Übersicht der Insel Seran. Map. *Petermanns Mitt.,* Vol. 60, 1914, July, pp. 16-18.

—— De grensstreken tusschen Loewoe en Mamoedjoe in Centraal-Celebes. Map. *Tijdschr. Kon. Nederl. Aardrijksk. Genoot.,* Tweede Series, Deel 31, 1914, No. 4, pp. 475-500. Amsterdam.

French Indo-China. LAJONQUIÈRE, L. DE. L'Indochine en 1913. *Rev. de Géogr. Commerc.,* Vol. 40, 1914, No. 2, pp. 53-60, No. 3, pp. 86-95. Bordeaux.

India. BROWN, J. C. A Geological Reconnaissance through the Dihong Valley, being the Geological Results of the Abor Expedition, 1911-12. Map. *Records Geol. Surv. of India,* Vol. 42, 1912, Part 4, pp. 231-253. Calcutta.

Philippine Islands. —— Annual Report of the Weather Bureau for 1911. Part 1: Work of the Bureau during the Fiscal Year ended June 30, 1911. Part 2: Hourly Meteorological Observations made at the Central Observatory of Manila during the Calendar Year 1911. 166 pp. Manila, 1914.

Russian Central Asia. WOEIKOF, A. Die Gewässer Russisch-Turkestans und die Zukunft der Bodenkultur des Landes. *Zeitschr. Gesell. für Erdk. zu Berlin*, 1914, No. 5, pp. 341-355.

Turkey in Asia. GALLOIS, E. Produits et ressources de la Turquie d'Asie. *Bull. Soc. Géogr. Comm. de Paris*, Vol. 36, 1914, No. 7, pp. 496-502.

AUSTRALASIA AND OCEANIA

BURGER, F. Land und Leute auf den südöstlichen Molukken, dem Bismarckarchipel und den Salomon-Inseln. Ills. *Kolon. Zeitschr.*, Vol. 15, 1914, No. 22, pp. 336-339, No. 23, pp. 351-356, No. 24, pp. 370-375, No. 25, pp. 389-395.

Australia. DUNSTAN, B. Queensland Mineral Index and Guide. 1014 pp. Maps, diagrams. *Queensland Geol. Surv., Public. No. 241.* Brisbane, 1913.

DUNSTAN, B. Coal Resources of Queensland (A General Review). 29 pp. *Queensland Geol. Surv. Public. No. 239.* Brisbane, 1913.

HALLIGAN, G. H. The Physiography of Botany Bay. *Journ. & Proc. of the Roy. Soc. of New South Wales*, Vol. 47, 1913, Part 2, pp. 120-129. Sydney.

MAYER, A. G. An Expedition to the Coral Reefs of Torres Straits. Map, ills. *Pop. Sci. Monthly*, Vol. 85, 1914, No. 3, pp. 209-231.

WATERHOUSE, L. L. The Stanley River Tin Field. 210 pp. Maps, sections. *Tasmania Geol. Surv. Bull. No. 15.* Hobart, 1914.

British New Guinea. BEAVER, W. N. A Description of the Girara District, Western Papua. Map, ills. *Geogr. Journ.*, Vol. 43, 1914, No. 4, pp. 407-413.

Fiji Islands. FRICKE, K. Die wirtschaftliche Bedeutung der Fidschi-Inseln. Ills. *Der Tropenpflanzer*, Vol. 18, 1914, No. 6, pp. 299-315.

German New Guinea. SCHULTZE JENA, L. Forschungen im Innern der Insel Neuguinea. (Bericht des Führers über die wissenschaftlichen Ergebnisse der deutschen Grenzexpedition in das westliche Kaiser-Wilhelmsland 1910.) 100 pp. Maps, ills. *Mitt. aus den Deutschen Schutzgeb. Ergänzungsheft No. 11.* Berlin, 1914.

THURNWALD, —. Vom mittleren Sepik zur Nordwestküste von Kaiser-Wilhelmsland. Vorläufiger Bericht. Map. *Mitt. aus den Deutschen Schutzgeb.*, Vol. 27, 1914, No. 1, pp. 81-84.

Hawaiian Islands. PIERCE, C. H., AND G. K. LARRISON. Water Resources of Hawaii 1912. 392 pp. Index. *U. S. Geol. Surv. Water-Supply Paper 336.* 1914.

Society Islands. FROMENT-GUIEYSSE, —. Tahiti et les Iles sous le Vent. *Bull. Soc. Géogr. Comm. du Havre*, Vol. 30, 1913, Trim. 3 & 4, pp. 337-351.

EUROPE

BELLOC, É. Observations sur quelques noms de lieux de la péninsule ibérique. *Bull. du Com. des Travaux Hist. et Sci., Section de Géogr.*, Vol. 28, 1913, No. 1-2, pp. 24-45. Paris.

BELLOC, É. Les rías de la côte occidentale d'Ibérie et les formations analogues, fjords, firths, friths, lochs, loughs, aberiou, etc. Map. *Bull. Com. des Travaux Hist. et Sci., Section de Géogr.*, Vol. 28, 1913, No. 1-2, pp. 84-159. Paris.

Austria-Hungary. SCHUBERT, R. Balkanhalbinsel. A. Die Küstenländer Osterreich-Ungarns. 51 pp. *Handbuch der Region. Geol.* (Herausge-

XUM

geben von G. Steinmann und O. Wilckens), No. 16, Vol. 5, Abteil. 1. Heidelberg, 1914.

British Isles. MORT, F. The Sculpture of North Arran. Map, ills. *Scott. Geogr. Mag.*, Vol. 30, 1914, No. 8, pp. 395-404.

STIRLING-MAXWELL, J. The Place of Forestry in the Economic Development of Scotland. *Trans Roy. Scott. Arboricultural Soc.*, Vol. 27, 1913, Part 2, pp. 161-171. Edinburgh.

Denmark. —— Magnetisk Aarbog, 1909-1911. 26 pp. Diagrams. Danske Meteorol. Inst., Copenhagen, 1913.

—— Nautisk-Meteorologisk Aarbog, 1913. 156 pp. Maps. Danske Meteorol. Inst., Copenhagen, 1914.

France. ALLIX, A. La morphologie glaciaire en Vercors. 185 pp. Maps, ills. *Recueil des Travaux de l'Inst. de Géogr. Alpine* (Univ. de Grenoble), Vol. 2, 1914, Fasc. 1.

ARBOS, P. Evolution économique et démographique des Alpes Françaises du sud. *Bull. Com. des Travaux Hist. et Sci., Section de Géogr.*, Vol. 28, 1913, No. 1-2, pp. 296-306. Paris.

Iceland. KÜCHLER, C. Der Ausbruch der Hekla vom Jahre 1913. Maps. *Geogr. Zeitschr.*, Vol. 20, 1914, No. 2, pp. 93-104.

SPETHMANN, H. Die Schildvulkane des östlichen Inner-Island. Ills. *Zeitschr. Gesell. für Erdk. zu Berlin*, 1914, No. 5, pp. 364-393.

Russia. RAMSAY, W. Über die Verbreitung von Nephelinsyenitgeschieben und die Ausbreitung des Nordeuropäischen Inlandseises im nördlichen Russland. 17 pp. Map. *Fennia (Bull. Soc. Géogr. de Finlande)*, No. 33, Art. 1. Helsingfors, 1912-1913.

TANNER, V. Nautsjok-Karnijok-Luttojok-Nuorttijärvi. Anteckningar under en snabbtur i ryska Lappland. 1909. Map. 34 pp. Map, ills. *Fennia (Bull. Soc. Géogr. de Finlande)* No. 33, Art. 2. Helsingfors, 1912-13.

ZHILINSKI, A. White Sea Canal. [In Russian.] *Bull. Archangel Soc. Explor. of the Russian North*, Vol. 6, 1914, No. 9, pp. 263-269.

—— Russia. Complete Geographical Description of Our Country. Edited by B. P. Semenov-Tian-Shansky. [In Russian]. Vol. 1: The Moscow Industrial Region and Upper Volga Region. By A. Pechayev, I. P. Semenov, and others. 484 pp. Maps, ills., index. Vol. 5: Ural and Adjoining Regions. By G. N. Kirilin, N. A. Korostelev, and others. 669 pp. Maps, ills., index. A. F. Devrien, St. Petersburg, 1899, 1914.

—— Russia as a German Neighbor. (Translated from *Berliner Tageblatt* March 9, 1914.) Relations between Germany and Russia from a German point of view. *Journ. of Military Service Inst., No. 191*, Vol. 55, 1914, pp. 268-271. Governor's Island, N. Y.

Spain. BUEN, O. DE. L'Institut espagnol d'océanographie. 10 pp. *Bull. de l'Inst. Océanogr. No. 295*, 1914, Monaco.

Switzerland. MANZ, W. Beiträge zur Ethnographie des Sarganserlandes. Ills. *Jahresbericht Geogr.-Ethnogr. Gesell. in Zürich, 1912-13*, pp. 13-159.

POLAR

RÜDIGER, H. Bremen und die deutsche Polarforschung. *Deutsche Geogr. Blätter*, Vol. 37, 1914, No. 1-2, pp. 1-13. Bremen.

Antarctic. DECOUZ, P. Un Hivernage aux Iles Kerguelen. Ills. *Tour du Monde*, Vol. 20, 1914, No. 21, pp. 211-252.

MOSSMAN, R. C. Meteorology of the Weddell Quadrant during 1912. *Quart. Journ. Roy. Meteorol. Soc.*, Vol. 40, 1914, No. 170, pp. 137-153. London.

MURPHY, R. C. Die "Bay of Isles" in Südgeorgien. *Petermanns Mitt.*, Vol. 60, 1914, May, pp. 279-280.

Arctic. BLINK, H. Fahrten und Forschungen der Holländer in den Polargebieten. Altholländische Berichte zur Geographie, Kultur- und Wirtschaftskunde der nördlichen Meere. 248 pp. Maps. *Quellen & Forschungen zur Erd- & Kulturkunde, Vol. 7.* Leipzig, 1913.

WORLD AND PARTS OF IT

BAUER, V. Notizen aus einem biologischen Laboratorium am Mittelmeer. Ills. *Internat. Rev. der gesamten Hydrobiol. & Hydrogr.*, Vol. 6, 1913, No. 1, pp. 31-37, No. 2-3, pp. 147-154. Leipzig.

FRÜH, J. Zur Kenntnis der Sargassosee. *Petermanns Mitt.*, Vol. 60, 1914, April, pp. 196-197.

HAGEN, H. B. Geographische Studien über die floristischen Beziehungen des mediterranen und orientalischen Gebietes zu Afrika, Asien und Amerika: Teil 1. *Mitt. Geogr. Gesell. in München*, Vol. 9, 1914, No. 1, pp. 111-222.

HAMILTON, L. The German Colonies, 1912-1913. *United Empire*, Vol. 5, 1914, No. 6, pp. 493-497.

HINTZE, H. Straussenzucht und Straussenfeder-Handel in Südafrika und anderen Ländern. *Der Tropenpflanzer*, Vol. 18, 1914, No. 5, pp. 259-271, No. 6, pp. 323-331. No. 7, pp. 381-392.

MECKING, L. Der Golfstrom in seiner historischen, nautischen und klimatischen Bedeutung. 28 pp. Maps. *Meereskunde: Sammlung volkstümlicher Voträge, No. 51*, Berlin, 1911.

VAUGHAN, T. W. The Building of the Marquesas and Tortugas Atolls and a Sketch of the Geologic History of the Florida Reef Tract. Extract, *Carnegie Inst. Public. No. 182*, pp. 57-67. 1914.

—— Commission Internationale pour l'exploration scientifique de la Mer Méditerranée. 2ème Réunion, tenue à Rome 3 février 1914. 19 pp. *Bull. de l'Inst. Océanogr. No. 289*, 1914. Monaco.

—— Education in the Territories and Outlying Possessions—Hawaii, Philippines, Canal Zone, Samoa, Guam. *Rept. Commissioner of Educ. for Year Ended June 30, 1913*, Vol. 1, pp. 642-677. Washington, D. C., 1914.

—— Elenco dei fari, segnalamenti marittimi e dei semafori e stazioni radiotelegrafiche: Parte 1:—Esistenti sulle coste della Corsica, d'Italia e dell'Arcipelago Maltese. 210 pp. Parte 2:—Esistenti sulle coste del Mare Mediterraneo, Mar Nero, Mar d'Azuf, Mar Rosso, Golfo d'Aden e Costa Est d'Africa da Guardafui a Zanzibar. 501 pp. Corretto al 1 Gennaio 1914. Ist. Idrogr., Genova.

—— Le régime forestier aux colonies. (Bibliothèque Colon. Internat., 11me Serie.) Tome I: Inde britannique, Colonies britanniques. 550 pp.; Tome 2: Colonies britanniques, Colonies néerlandaises. 515 pp.; Tome 3: Colonies allemandes, italiennes, américaines, Congo belge, Colonies françaises. 505 pp. Inst. Colon. Internat., Brussels, 1914.

MATHEMATICAL GEOGRAPHY AND CARTOGRAPHY

BIHOT, C. La carte internationale du monde à l'échelle du millionième. Diagrams. *Bull. Soc. Roy. de Géogr. d'Anvers*, Vol. 37, 1913, Fasc. 3-4, pp. 267-282. 1914.

BRÜCKNER, E. Die Internationale Weltkarten-Konferenz in Paris im Dezember 1913. *Mitt. k. k. Geogr. Gesell. in Wien*, Vol. 57, 1914, No. 5-6, pp. 207-224.

HAAG, H. Die Geschichte des Nullmeridians. Dissertation, Univ. Giessen. 112 pp. Map. O. Wigand, Leipzig, 1913.

HAMMER, E. Die neue Weltkartenprojektion von Cahill. *Petermanns Mitt.*, Vol. 60, 1914, June, p. 323.

SCHWARZLEITNER, A. VON. Die Landkarte im Gebrauche der Schule. *Geogr. Anzeiger*, Vol. 15, 1914, No. 2, pp. 34-38, No. 3, pp. 52-57.

VILLIERS, J. A. J. DE. Famous Maps in the British Museum. Maps. *Geogr. Journ.*, Vol. 44, 1914, No. 2, pp. 168-188.

WALTER, M. Die Topographische Karte 1:25,000 (Messtischblätter) als Grundlage heimatkundlicher Studien. 60 pp. Maps. *Geogr. Bausteine (Schriften des Verbandes deutscher Schulgeogr.) No. 8.* Gotha, 1914.

GEOPHYSICS

BOWIE, W. Isostasy and the Size and Shape of the Earth. *Science*, No. 1011, Vol. 39, 1914, pp. 697-707.

XUM

GALITZIN, B. Vergleichende Zusammenstellung über die Anzahl der auf verschiedenen Stationen registrierten Erdbeben. *Bull. de l'Acad. Imp. des Sci. de St. Pétersbourg*, 6e Série, 1914, No. 9, pp. 619-631.

RUDOLPH, E., AND S. SZIRTES. Zur Erklärung der geographischen Verteilung von Grossbeben. Maps. *Petermanns Mitt.*, Vol. 60, 1914, March, pp. 124-130, April, pp. 184-189.

PHYSICAL GEOGRAPHY

FRIEDERICHSEN, M. Moderne Methoden der Erforschung, Beschreibung und Erklärung geographischer Landschaften. 36 pp. Ills. *Geogr. Bausteine (Schriften des Verbandes deutscher Schulgeogr.) No. 6.* Gotha, 1914.

HETTNER, A. Die Vorgänge der Umlagerung an der Erdoberfläche und die morphologische Korrelation. *Geogr. Zeitschr.*, Vol. 20, 1914, No. 4, pp. 185-197.

JOHNSON, D. W. Botanical Phenomena and the Problem of Recent Coastal Subsidence. Ills. Reprint. *Botan. Gazette*, Vol. 56, 1913, No. 6.

OBST, E. Terminologie und Klassifikation der Berge. *Petermanns Mitt.*, Vol. 60, 1914, April, pp. 177-183, May, pp. 241-249, June, pp. 301-310.

OCEANOGRAPHY

EKMAN, V. W. Der adiabatische Temperaturgradient im Meere. *Annal. der Hydrogr. und Marit. Meteorol.*, Vol. 42, 1914, No. 6, pp. 340-344.

HENSEN, V. Die Wirkung der Sonnenstrahlung auf die Ozeane und deren Ausbeutung. *Die Naturwissenschaften*, Vol. 1, 1913, No. 49, pp. 1189-1193.

SCHOTT, G. Adiabatische Temperaturänderung in grossen Meerestiefen, mit besonderer Berücksichtigung der Beobachtungen S. M. S. "Planet." Diagrams. *Veröffentl. Geophysikal. Inst., Univ. Leipzig*, 1914, pp. 101-116. 321-340.

METEOROLOGY AND CLIMATOLOGY

HESSELBERG, T., AND H. U. SVERDRUP. Über den Einfluss der Gebirge auf die Luftbewegung längs der Erdoberfläche und auf die Druckverteilung. Diagrams. *Veröffentl. Geophysikal. Inst., Univ. Leipzig*, 1914, pp. 101-116.

WARD, R. DEC. Land and Sea Breezes. *Monthly Weather Rev.*, Vol. 42, 1914, No. 5, pp. 274-277.

HISTORICAL GEOGRAPHY

LEMLY, H. R. Vasco Nunez de Balboa. *Journ. Military Service Inst.*, No. 191, Vol. 55, 1914, pp. 225-233. Governor's Island, N. Y.

THOMSON, B. Lost Explorers of the Pacific. Ills. *Geogr. Journ.*, Vol. 44, 1914, No. 1, pp. 12-33.

—— Vasco Núñez de Balboa y el descubrimiento del Mar del Sul. Discursos de los Sres. Beltrán y Rózpide, Saralegui, Altolaguirre, Conde y Luque, Sosa y Motta que se dijeron ó leyeron en la sesión extraordinaria celebrada por la Real Sociedad Geográfica el 25 de Septiembre de 1913 para conmemorar, en el dia de su cuarto centenario, el descubrimiento del Océano Pacifico. *Bol. Real. Soc. Geogr.*, Vol. 55, 1913, Cuarto trim. Madrid.

ECONOMIC AND COMMERCIAL GEOGRAPHY

OPPEL, A. Der Anbau der Baumwolle in Abhängigkeit von Klima und Boden. *Geogr. Zeitschr.*, Vol. 20, 1914, No. 5, pp. 241-257.

PRAESENT, H. Das Luftschiff im Dienste der geographischen Forschung und der Kolonien. *Petermanns Mitt.*, Vol. 60, 1914, April, pp. 198-199.

RIEDEL, J. Allgemeine Verkehrsgeographie mit besonderer Berücksichtigung von Mitteleuropa in Anlehnung an des Verfassers Verkehrskarte von Mitteleuropa. 27 pp. Map. List & von Bressensdorf, Leipzig, 1913.

VAN KONIJNENBURG, E. Shipbuilding from Its Beginnings. Maps, ills. Vol. 1: 107 pp. Vol. 2: 74 plates. Vol. 3: 100 plates. Permanent Intern. Assoc. of Congresses of Navig., Brussels, 1914 (?)

WAGNER, R. Die Grundzüge des englischen Havariegrosse-Rechtes. 59 pp. *Publik. der Exportakad.* Vienna, 1914.

WARREN, G. M. Tidal Marshes and Their Reclamation. 99 pp. Maps, ills. *U. S. Dept. of Agric. Office of Experiment Stations Bull. 240.* 1911.

—— Discussion on the Relation of Forestry to Agriculture. *Trans. Roy. Scott. Aboricultural Soc.*, Vol. 27, 1913, Part 2, pp. 121-142. Edinburgh.

METHODOLOGY AND TEACHING

MORSE, J. F. Teaching Seasons without Globes. *Journ. of Geogr.*, Vol. 12, 1913-14, No. 9, pp. 317-321.

SUTHERLAND, W. J. The Vocational Aspect of Regional Geography. *Journ. of Geogr.*, Vol. 12, 1913-14, No. 9, pp. 308-312.

NEW MAPS

EDITED BY THE ASSISTANT EDITOR

For system of listing maps see p. 74 of this volume

NORTH AMERICA

UNITED STATES

United States. Aberle's Railroad, Financial, Commercial and Statistical Map of the United States and parts of the Dominion of Canada and Mexico. Designed by Edward Aberle, Geographer and Engraver, West Nutley, N. J. 1:3,168,000. 55½° - 23° N.; 131° - 58° W. 68 colors. Published by the Brett Lithographing Co., 605-611 West 129th St., New York, 1908. (Price $15.00.)

[The second, third and fourth qualifying adjectives of the title should be considered subordinate to the first, for the map is exclusively a railroad map. As such, it is by far the best of its class that has come to the reviewer's notice. Each railroad system is shown by a distinctive symbol in color. No less than 123 railroad systems are shown, and still each can be traced with perfect clearness. This is due to the great flexibility of the system of symbols used. Although only five colors are employed—red, blue, yellow, green and brown—, by an ingenious use of various patterns, supplemented by similar devices in black, the remarkable number of 63 distinct symbols has been evolved, which, by judicious use of the same symbol for non-contiguous systems, suffices to represent all the railroads of the country. The width of line used—2 millimeters for the trunk lines and 1 millimeter for the others—lends firmness to the delineation while not detracting from its accuracy. Clearness and pleasing effect are attained by never allowing the colored lines to cross each other: by interrupting the color of one line where it would cross another, the lines are given the appearance of going over or under each other. These and other matters, such as the selection of the colors used and the perfect register obtained, show that the author has artistic sense—a quality indispensable in cartography as in the other graphic arts. This admirable execution insures clear expression of the content. The map will be found invaluable in ascertaining which railroad routes are used between various points. Maps which do not differentiate between railroad systems—such as the U. S. Geological Survey base map, 1:2,500,000, to which one would naturally turn—simply show where railroads exist, or, if they do indicate the name of a rail-

XUM

road along its route, as does the Century Atlas and similar atlases, it is a rather tedious task to pick out the line one wishes to follow. The alternative of looking up a standard time table manual, such as the National Railway Publication Company's *Official Guide of the Railways of the United States, etc.*, is no less time-consuming. All such questions the present map answers at a glance.]

AFRICA

Morocco. Marruecos: Región S. O. al sur del Rio Tensift, por el Teniente Coronel (retirado) de Estado Mayor Don Eduardo Alvarez Ardanuy. 1912. 1:500,000. 32°5′ - 27°30′ N.; 14°40′ - 7°25′ W. 3 colors. With 15 insets: (1) Mogador (Es-Suira). [After] Comisión del Cuerpo de E. M. del Ejército en Marruecos. 1895. 1:20,000. [31°30′ N. and 9°45′ W.]. 4 colors. (2) Marruecos (Marrakex). [After] Capitán de E. M. Alvarez Ardanuy. 1894. 1:50,000. [31°40′ N. and 8°0′ W.]. 4 colors. (3) Desembocadura del Uad Dra. [After] Gatell. 1865. 1:50,000. [28°42′ N. and 11° W.]. 2 colors. (4) Aguelmin. [After] Gatell. 1864-65. 1:10,000. [28°57′ N. and 10°4′ W.]. 4 colors. (5) Agadir Iguir. [After] Gatell. 1864-65. 1:20,000. [30°27′ N. and 9°37′ W.]. 3 colors. (6) Saibajarsa ó Saheb el Hárxa. [After] Gatell. 1865. 1:20,000. [28°28′ N. and 10°20′ W.]. 3 colors. (7) Puerto de Sta. Cruz de Mar Pequeña. Según D. Antonio Ma. Manrique. [1:82,000]. [28°3′ N. and 12°13′ W.]. 2 colors. (8) Tarudant. [After] Gatell. 1864. 1:40,000. [30°30′ N. and 8°50′ W.]. 4 colors. (9) Uina ó Méano. [After] Gatell, 1865, y Boletín de la Sociedad Geográfica de Madrid, memoria del Señor Fernández Duro, Marzo de 1878. 1:10,000. [28°30′ N. and 11°18′ W.]. 3 colors. (10) Uad - Xebika. [After] Gatell. 1865. 1:50,000. [28°20′ N. and 10°29′ W.]. (11) Tarfaya; Las Matas de Sn. Bartolomé. [After] Gatell. 1865. 1:20,000. [27°57′ N. and 12°54′ W.]. (12) Asaka. [After] Comandte. E. M. Jáudenes. 1883. 1:50,000. [29°10′ N. and 9°21′ W.]. 2 colors. (13) Uadkesis. [After] Jáudenes. 1883. 1:40,000. [29°15′ N. and 10°16′ W.]. 2 colors. (14) Ifni. [After] Jáudenes. 1883. 1:50,000. [29°20′ and 10°9′ W.]. 3 colors. (15) Sid Mohámed Ben Abd-al-Lah. [After] Jáudenes. 1883. 1:40,000. [29°33′ N. and 10° W.]. 2 colors. In 4 sheets. Constitutes Vol. 56, 1914, No. 4, of the *Bol. Real Soc. Geogr. Madrid.*

[Valuable map on a relatively large scale, based mainly on route surveys, comprising the region (south of 32° N. and west of 7½° W.) where the High Atlas and the Anti-Atlas abut upon the Atlantic. The scale is the same as that of the standard map of Morocco published by the French Service Geographique de l'Armée; the area shown is there covered by sheets "Marrakech" and "Oued Noun" (see, under "Morocco," *Bull.*, Vol. 44, 1912, p. 477). Routes surveyed by Spaniards are shown in red, others in black. Relief is in brown shading, hydrography in blue, towns and tribal names in red. The insets comprise the larger towns and roadsteads. Of these, the former recall the pleasing style of the topographic map of Spain, as is natural, inasmuch as the map was engraved and printed in the Instituto Geográfico y Estadístico. The sources (enumerated at the bottom of the map) seem, on the whole, somewhat old.

The meridians shown refer to Madrid; on the upper edge of the map they are correlated with longitude from Greenwich. The values given for the latter are incorrect, however: the meridian designated 6°30′ W. from Greenwich is actually in 7°52½′ longitude, for instance, and so on for the rest of the figures. The error may possibly be due to a double slip: first, the use of an old, incorrect longitude for Marrakesh, 7°36′ W., and then the incorrect labeling of the meridian thus drawn as 6°30′ instead of 7°30′ (Marrakesh is shown as lying in 6°36′ W. from Greenwich). The longitudes from Madrid are correctly designated; they do not always, however, seem to be based on the latest determinations. Marrakesh, for instance, correctly interpreted, is shown in longitude 7°58′ W. from Greenwich, while such recent maps as the French army map, referred to above, or Barrère's map, listed below under "Morocco," give its longitude as 8°2′ W.]

Morocco. Maroc: Carte dressée sous la direction de Henry Barrère, Editeur-Géographe. Dessinée par Paul Lefèvre. 1913. 1:1,000,000. 36° - 28° N.; 12° W. - 0°. 7 colors. With two insets: (1) Plan de Fès. [1:26,000]. [34°5′ N. and 4°57′ W.]. 5 colors. (2) Plan de Marrakech. [1:26,000]. [31⅔° N. and 8° W.]. 3 colors. Printed by Erhard Fres., published by the Maison Andriveau-Goujon (Henry Barrère, Editeur), 21 rue du Bac, Paris.

[Excellent large-scale general map of Morocco based on the most recent data. The map, which is in the manner of French colonial maps, has the usual pleasing appearance of the best maps of that class. Relief is in approximate contours in brown, supplemented by shading in gray; drainage is in blue, roads and market towns in red, other towns and tribal names in black. The *erg*, or sand desert, surfaces are shown in buff. The felicitous use of the millionth scale, as in the case of the map of the adjoining region listed below (Spanish Sahara), adds to the constantly growing number of comparable maps, even before the publication of the corresponding sheets of the International Map of the World.]

Nyasaland-German and Portuguese East Africa. (a) Versuch einer Geologischen Karte des Njassa-Gebietes. 1:1,000,000. 8½ - 15¼° S.; 33° - 36° E. 12 colors.

(b) Orographische Skizze des Njassagebietes. Same scale and coordinates as map (a). 16 colors.

(c) Der Njassa-Graben. 1:7,000,000. 7½° - 15° S.; 31¾° - 36° E.

(d) [Seven maps of the northern half of the Lake Nyasa region, 1:3,000,000 (except Nos. 6 and 7, which are 1:5,000,000), limited by 8¾° - 11⅕° S. and 33° - 35⅘° E., entitled:] (1) Verteilung der Winde im Januar. 1 color. (2) Verteilung der Winde im Juli. 1 color. (3) Vegetations-Karte. 7 colors. (4) Verbreitung der Hüttenformen. 9 colors. (5) Verbreitung der Wirtschaftsformen. 7 colors. (6) Nutzbare Mineralien. (7) Vorkommen von Tsetse u. Schlafkrankh.

(e) Regen-Karte: Rohe Jahresmittel. [1:3,000,000]. 8½ - 17° S.; 32⅖° - 36½° E. 6 colors.

Accompany: maps (a) and (b) as Karten 1 and 2, respectively, maps under (d) and (e) as Karten 3 to 10, on one sheet, and map (c) as text map on p. 7, "Der Njassasee und das Deutsche Njassaland: Versuch einer Landeskunde" by G. Frey, *Ergänzungsheft Nr. 10, Mitt. aus den Deutschen Schutzgeb.*, 1914.

[Valuable maps illustrating various phases of the geography of the Lake Nyasa region. Maps (a) and (b) summarize, on a relatively large scale, all present knowledge as to the geology and relief of the district. The hypsometrical coloring on map (b) is graduated for every 250 meters. The legend gives the absolute elevation of the lowest land tint as 500-250 meters, which is incorrect, as the altitude of the lake surface is 478 meters, as stated in the text itself (p. 8). On map (e) six degrees of rainfall are distinguished.]

Spanish Sahara. (a) Sáhara Español y Región Inmediatos. Por Enrique d'Almonte. 1914. 1:1,000,000. 29° - 20° N.; 19° - 7° W. 7 colors. In 4 sheets.

(b) [Three charts:] (1) Puerto Cansado. 1913. 1:100,000. [28°5′ N. and 12°12′ W.]. (2) Fondeadero de Tarfaya ó de las Matas de San Bartolomé (Cabo Yubi). 1913. 1:20,000. [27°50′ N. and 12°55′ W.]. (3) Plano de Rio de Oro. 1913. 1:200,000. [23°55′ - 23°32′ N.; 16°0′ - 15°42′ W.]

Accompany: map (a) separately, maps under (b) facing respectively pp. 141, 143 and 152, "Ensayo de una breve descripción del Sáhara español" by E. d'Almonte, *Bol. Real Soc. Geogr. Madrid*, Vol. 56, 1914, No. 2-3, pp. 129-347.

[Map (a) an important map on a relatively large scale of the Spanish territory on the Atlantic coast of the Sahara, which since its expansion northward from the former colony of Rio de Oro (cf. map listed under "Morocco, (2)," *Bull.*, Vol. 45, 1913, p. 397) is, it seems, to be known as the Spanish Sahara—a very appropriate name. The characteristic physical features of the region are well brought out. The typical sandstone mesas and plateaus are shown by brown shading: distinction is made between granitic (shown in gray) and

XUM

quartzite (in brown) outcrops. Dunes are shown in yellow. Drainage is in blue; four kinds of wells are distinguished according to the quantity and the quality of their water. Towns and routes are in black, tribal names in red. On the coast, the limit of the fishing area is shown, as well as the currents. The treatment of the latter, both in the legend on the map and in the text (pp. 164-166), reveals a lack of familiarity with modern oceanographical research. The Canary Current is designated the Gulf Stream—a somewhat infelicitous extension—and the upwelling of cold water on this coast—a well-known phenomenon on western, lee (and therefore desertic) coasts of the continents in mid-latitudes, as in German Southwest Africa, the Atacama district of Chile or in California—is still ascribed to a "corriente fría polar antárctica." The map is doubtless the most complete extant representation of the region.]

EDUCATIONAL

North America–South America–Africa. [Three wall maps:] (1) North America. Modified conic projection. 1:7,250,000. 9 colors. With inset: Continuation of Alaska Peninsula. [Same scale]. (2) South America. Modified orthographic projection. 1:6,336,000. 7 colors. With two insets: (a) Galapagos Isles. Same scale. (b) Panama Canal [Zone]. [1:500,000]. (3) Africa. Modified orthographic projection. 1:8,200,000. 12 colors. With two insets: (a) Delta of the Nile Showing Suez Canal. [1:1,700,000]. (b) New England States. 1:8,200,000. In series: International Series. Constructed and engraved by W. & A. K. Johnston, Limited, Geographers, Engravers & Printers, Edinburgh and London. Authorized American Edition, A. J. Nystrom & Co., Sole U. S. Agents, Chicago.

[Very fair series of political wall maps. Political divisions are shown by surface coloring, reinforced by heavy red or other colored border lines. Relief is shown in brown hachuring. The principal railroads, steamship lines, with time of passage, and cables are shown. The nomenclature is too copious for educational purposes. The maps are lithographic transfers from the original plates and were printed in America.]

North America–South America–Europe. [Three wall maps:] (1) Nordamerika: Physikalische Schulwandkarte in Verbindung mit Prof. Dr. Gustav Leipoldt in Dresden gezeichnet von M. Kuhnert, Realschuloberlehrer in Chemnitz. 1:6,000,000. 7 colors. (2) Physical Wall Map [of] South America (Relief-like Series). Designed by M. Kuhnert and Prof. Gustav Leipoldt. 1:6,000,000. 7 colors. (3) Europa: Physikalische Schulwandkarte in Verbindung mit Prof. Dr. G. Leipoldt in Dresden gezeichnet von M. Kuhnert, Realschuloberlehrer in Chemnitz. 1:3,000,000. 7 colors. (1) and (3) published by A. Müller (Fröbelhaus), Dresden, (2) by Goder-Heimann Co., Chicago.

[These maps are specimens of a series of German physical wall maps imported by A. J. Nystrom and Co. of Chicago. Maps (1) and (3) have nomenclature in German, map (2) is mute. An earlier edition of map (3) was reviewed in the *Bull.*, Vol. 38, 1906, p. 196. The maps differ considerably from the usual type of German wall maps. Relief is represented essentially in two colors, green for the lowlands and gray for the highlands. The representation of the latter resembles a relief model made in wet sand. While the attempt thus to render relief plastic to the uninitiated is praiseworthy, the result is inferior to the customary type of German physical wall maps with their green-buff-brown gamut and shading in brown. There is a certain crudeness and stiffness about the mountains which may be due to the lack of a master hand—for nothing so tests the cartograher's skill as the representation of relief—but we are inclined to believe that it is also due to the method employed. In general conception the maps, to be sure, fulfill the requirements of a wall map, boldness of design and elimination of non-essentials. Judged by American standards they are excellent, judged by German standards, however, they are mediocre. If we are to import school maps, why should we not have the best? Why not select such excellent series as those by Gaebler, Diercke, Haack or Sydow-Habenicht, which represent the very acme of the school cartographer's

art, or why not turn to England, which, in our own language, can supply us with such excellent series as those by Herbertson, Unstead and Taylor or Philip?]

Other Maps Received

EUROPE

Austria-Hungary. Linz an der Donau. 1:10,000. [The City Engineer, Linz, 1913]

[Plans of Vienna]. (1). Der Wald- und Wiesengürtel und die Höhenstrasse der k. k. Reichshaupt u. Residenzstadt Wien. Verfasst vom Stadtbauamte. 1:30,000. 1905. (2). Reliefplan von Wien mit dem Wald- und Wiesengürtel und der Höhenstrasse. 1:56,000. (3). Detail-Darstellung eines Teiles des Wald- u. Wiesen- bezw. Gartengürtels am Laaerberge. 1:2,880. 1905. (4). Plan der k. k. Reichshaupt- und Residenzstadt Wien. 1:25,000. Herausgegeben unter Mitwirkung des Wiener Stadtbauamtes. Gezeichnet von Karl Loos. 1913. (5). Übersicht der Verteilung der Gärten, Wiesen, Waldflächen und anderer unverbaut bleibender Gebiete in den Städten: Paris, Berlin, London und Wien. 1:150,000. [Gift from the City Engineer, Vienna].

Békés Csaba átnézeti térképe. 1:8,000. Készitette és kiadje Békéscsaba, mérnöki hivatala, [1913]. [Gift from the Mayor, Békés Csaba].

Temesvár szab. kir város Térképe és Városbövitésiterve. 1:10,000. [The City Engineer, Temesvár, 1913].

Belgium. Plan général de la ville de Charleroi. 1:7,500. Publié par A. Verwest, Graveur, Bruxelles, [1913]. [Gift from Bureaux de la Mairie, Charleroi].

Louvain. [Gift from Bureaux de la Mairie, Louvain].

Nouveau plan de Malines & ses faubourgs, dressé en 1908. 1:25,000. [Bureaux de la Mairie, Malines], 1908.

Plan de la commune de Seraing. 1:10,000. Dressé par J. Andrien et L. Picalausa. [Bureaux de la Mairie, Seraing], 1905.

British Isles. Plan of the City & Royal Burgh of Aberdeen. 3 in. to 1 mi. (1:21,120). Burgh Surveyor's Office, Aberdeen, 1909.

County Borough of Birkenhead. 6 in. to 1 mi. (1:10,560). Revised 1908-9. Published by the Director General at the Ordnance Survey Office, Southampton. [Gift from Borough Engineer's Office, Birkenhead].

[Bolton]. Reduced from 6-in. Ordnance Survey, by permission of the Board of Agriculture and Fisheries. 5 in. to 1 mi. (1:12,672). Hasler, Watson & Co., Ltd., Bolton, [1913]. [Gift from the City Engineer, Bolton].

Bacon's plan of Brighton and Hove. 9 in. to 1 mi. (1:7,040). G. W. Bacon & Co., Ltd., London, [1913]. [Gift from City Engineer, Brighton].

Robt. J. Cook & Hammond's map of the Borough of Croydon, with portions of Addington & Sanderstead. 6 in. to 1 mi. (1:10,560). Robt. J. Cook & Hammond Co., Westminster, [1913]. [Gift from the City Engineer, Croydon].

Harwood's new map of the County Borough of Derby, taken from the Ordnance Survey, with latest additions. With index to streets. 1:12,000. James Harwood, Derby, [1913]. [Gift from City Engineer, Derby].

Plan of Dundee, revised to date by Jas. Thomson, C. E., City Engineer. 6 in. to 1 mi. (1:10,560). Published by James P. Mathew & Co., Dundee, 1914. [Gift from City Engineer, Dundee].

Plan of Edinburgh, Leith and Portobello, with suburbs, constructed from Ordnance and private surveys. 1:10,570. W. & A. K. Johnston, Ltd., [Edinburgh], 1909-10. [Gift from City Engineer, Edinburgh].

Geo. Gibbons & Co.'s map of Leicester and environs. 6 in. to 1 mi. (1:10,560). Prepared and lithographed by Geo. Gibbons & Co., Leicester, [1913]. [Gift from the City Engineer, Leicester].

Leyton Urban District, Council District, Essex. 1 in. to 700 ft. (1:8,400). [City Engineer, Leyton], 1914.

[Plan of Manchester]. 2 in. to 1 mi. (1:31,680). Printed at the Ord-

XUM

nance Survey Office, Southampton, 1912. [Gift from City Surveyor, Manchester].

Plan of County Borough of Middlesbrough. 1 in. to 950 ft. (1:11,400). Borough Engineer & Surveyor, [Middlesbrough], 1913.

Jarrold's map of the rivers and broads of Norfolk and Suffolk. 4 in. to 1 mi. (1:15,840). Jarrold & Sons, Ltd., Norwich, [1913]. [Gift from City Engineer, Norwich]. 1/-.

Map of the City & Council of Norwich. 12 in. to 1 mi. (1:5,280). City Engineer, Norwich, 1909.

Plan of the City of Nottingham [from Nottingham Yearbook]. 4 in. to 1 mi. (1:15,840). [City Engineer, Nottingham], 1914.

City of Nottingham, railway communications [from Nottingham Yearbook]. 4 in. to 1 mi. (1:15,840). [City Engineer, Nottingham], 1914.

County Borough of Oldham. 6 in. to 1 mi. (1:10,560). Borough Surveyor's Office, Oldham, 1914.

Bacon's plan of Plymouth, Devonport, Stonehouse, &c. 6 in. to 1 mi. (1:10,560). G. W. Bacon & Co., Ltd., London, [1913]. [Gift from the City Engineer, Plymouth].

Map of Portsmouth. 6 in. to 1 mi. (1:10,560). Published by W. H. Barrell, Ltd., Portsmouth, [1913]. [Gift from the City Engineer, Portsmouth].

Rhondda Urban District, reduced from 6 in. Ordnance Survey, 1900 (second edition). 3 in. to 1 mi. (1:21,120). [The City Engineer, Rhondda].

Map of the County Borough of Salford. 6 in. to 1 mi. (1:10,560). The City Engineer, Salford, [1911].

Map of the County Borough of South Shields. 8 in. to 1 mi. (1:7,920). Borough Engineer & Surveyor, South Shields, 1908.

County Borough of Stockport. 3 in. to 1 mi. (1:21,120). Borough Engineer, Stockport, [1913].

Plan of the Borough of Sunderland, by John W. Moncur, Borough Engineer. 3 in. to 1 mi. (1:21,120). [City Engineer, Sunderland], 1910.

Map of the Willesden Urban District. 6 in. to 1 mi. (1:10,560). O. Claude Robson, Engineer to the Council, [Willesden], 1914.

France. Plan de la ville du Havre et des communes limitrophes. 3e édition, révisée. 1:10,000. [Bureaux de la Mairie, Havre], 1904.

Plan de la ville de Lille et de la banlieue. 1:10,000. [Bureaux de la Mairie, Lille], 1913.

Plan général de la commune de Lyon. 1:20,000. [Bureaux de la Mairie, Lyon], 1908.

Plan général de la commune de Lyon. Dressé par P. Saint-Denis, Géomètre Topographe, sous la direction du Service Municipal de la Voirie. 1:10,000. [Bureaux de la Mairie, Lyon], 1909.

Plan de Nancy dressé & mis à jour par Albert Barbier, Capitaine-Commandant les sapeurs-pompiers municipaux. 1:15,000. [Bureaux de la Mairie, Nancy], 1911.

Plan de Nantes, dressé par Jouanne, Conducteur des Ponts et Chaussées. 1:10,000. [Bureaux de la Mairie, Nantes], 1914.

Roubaix. Plan de la ville et de ses environs. 1:10,000. Service de la Voirie Municipale, [Roubaix], 1899.

Toulon. Plan de la ville et de ses environs. 1:10,000. [Bureaux de la Mairie, Toulon, 1913].

Plan de la ville de Toulouse. Edité par Edouard Privat. 1:10,000. [Bureaux de la Mairie, Toulouse, 1913].

Portugal. Carta topographica da cidade do Porto, reduzida da que foi mandada levantar na escale de 1:500 por ordem da camara municipal da mesma cidade referida ao anno 1892. Dirigida e levantada por Augusto Gerardo Telles Ferreira. 1:5,000. [6 sheets]. [Gift from the Mayor of Oporto, Portugal].

[Admirable map showing exhaustively the urban and suburban topography of Oporto. That this has been done so clearly, although only in black-and-white, is remarkable.]